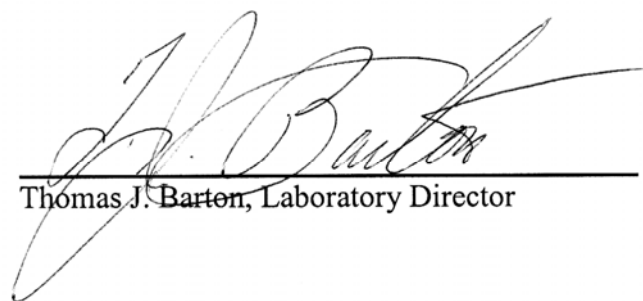


Ames Laboratory Ten Year Site Plan

2006 – 2017

Operated for the U.S. Department of Energy by Iowa State University.  
A member of ISU's Institute for Physical Research and Technology.



Thomas J. Barton, Laboratory Director



Date

## TABLE OF CONTENTS

## DESCRIPTION PAGE

1.0	Executive Summary .....	3
2.0	Site Summary .....	4
3.0	Mission .....	12
4.0	Land Use Plans .....	16
5.0	Facilities and Infrastructure (F&I) .....	17
5.01	Strategic F&I Goals/Issues .....	17
5.02	Condition Assessment Process .....	18
5.03	Condition Overview .....	21
5.04	Facilities Management, Space Management & Utilization .....	24
5.05	Facilities Supporting Mission Activities .....	25
5.06	Site Utility Systems .....	25
5.07	Leasing .....	25
5.08	Disposition .....	26
5.09	Facility Designations .....	26
5.10	Maintenance & Deferred Maintenance Reduction .....	27
5.11	Recapitalization .....	30
5.12	Line Item Projects .....	31
5.13	Performance Indicators and Measures .....	32
5.14	FIMS .....	32
5.15	Process for Development Plan .....	33
5.16	Energy Management .....	34
5.17	Replacement Plant Value (RPV) Estimates .....	34
6.0	Summary of Resource Needs .....	35
	Appendix 1 Summary Overview of SC Facilities at Ames Laboratory .....	50
	Appendix 2 Ames Laboratory Organizational Chart .....	52
	Appendix 3 FY 2006 Contractor Performance Evaluation & Measurement Plan .....	53
	Appendix 4 Table of Contents Crosswalk .....	57

## 1.0 Executive Summary

The U.S. Department of Energy's Ames Laboratory is a Government-owned, Contractor-operated facility located in Ames, Iowa on the campus of Iowa State University (ISU), its contractor. The Laboratory is strategically positioned to provide the Department of Energy a cost-effective facility to do world-class research. The Office of Science Program-Dedicated Laboratory operates in approximately 330,000 gross square feet of government-owned buildings with a total operating budget of \$30 million in FY'05. Ames Laboratory's vision is to excel as an interdisciplinary world-class materials research laboratory with an international reputation and to build on our core areas of excellence opening new frontiers in materials research. To achieve this vision, our mission is to conduct fundamental research in the physical, chemical, materials, mathematical sciences and engineering which underlie energy generating, conversion, transmission and storage technologies, environmental improvement and other technical areas essential to national needs. Ames' goal is to utilize the results of these fundamental investigations to design and develop novel magnetic, optical, catalytic and bio-inspired materials.

In order to achieve our vision, the condition of our facility infrastructure is of utmost importance. Both the facility infrastructure and operations are managed with a philosophy of long-term stewardship in mind. Because this philosophy has been a part of the heritage of the Ames Laboratory from its beginnings, the buildings have been well maintained over their lifetimes and remain in excellent condition.

The Laboratory is integrated into the ISU campus through a symbiotic relationship that provides a very flexible, dynamic, efficient and powerful structure. The Laboratory is situated on land under long-term lease to the Federal Government from Iowa State University. The lease has been and will be adjusted as necessary to accommodate the facility needs of the Laboratory. The Land Use Plan for the Laboratory is incorporated into the Ten Year Site Plan as Section 4. Operating on the university campus within the city of Ames allows the Laboratory to enjoy the benefits of the university/municipal infrastructure and operations without the responsibility for its capital investment or maintenance. This infrastructure includes such things as steam plant, chiller plant, water treatment plant, sewage system, landscaping, telecommunications and roads. This allows the Laboratory to focus its efforts on maintaining and operating core facilities that have direct impact on the research effort. The relationship with ISU also enables the Laboratory to use space in University-owned buildings through a space usage agreement without investing in permanent space or long-term leases. It provides a greater flexibility for the "footprint" to change according to the mission need without requiring new construction. It also enhances the ability to utilize research resources across the ISU campus and to perform interdisciplinary collaborations with ISU research staff.

The major new facility initiative proposed in the Ten Year Site Plan is the Ames Plant Metabolomics Resource Facility. This new initiative will build and equip a 90,000 gross square foot building to provide a national facility for plant metabolomics. It will combine the Laboratory's strengths in analytical and computational sciences and ISU's strengths in plant sciences to allow biologists to conduct genome-wide metabolite profiling, create the next generation of instrumentation for metabolomic investigation, develop computational methods for

metabolomics, and provide a resource for national and international collaboration. In addition to this, Ames has proposed new initiatives in Bioinspired Materials; Materials Discovery, Synthesis and Processing; a Distributed Electrostatic Levitation User Facility, a unique new analytical system; and in Applied Mathematics and Computational Sciences. Existing Ames Laboratory facilities and the relationship with ISU can uniquely support these new initiatives.

The Ames Laboratory facility is maintained in excellent condition. The overall facilities condition index is 2.7% and is on a slight downward trend. This rating has been accomplished through efficient use of maintenance expenditures. Historically this funding has been at a Maintenance Investment Index (MII) of approximately 1.5% to 1.7%. Currently the MII has been at 1.8% to 1.9%. This level of spending has been adequate for a number of reasons. The buildings were well designed and built. They have been well maintained over their lifetimes so that maintenance problems have not compounded themselves into more costly solutions. Capital improvement funds have been used judiciously to make betterments to the facility and improve the condition of aging systems. Many of the high maintenance utility generation and distribution systems are provided and maintained as part of the contractor's campus infrastructure. Maintenance expenditures are evaluated and set in conjunction with other resource requirements to maximize the overall mission effectiveness of the Laboratory, keeping a long-term view in mind. Laboratory management will not mortgage the long-term condition of the facilities to achieve short-term output. The proposed plan will control the FCI at approximately 2.5% which is near the top adjectival rating in both the self assessment and the FIMS rating systems. The condition rating of the facilities is further validated by occupant survey results where 70% of the respondents rate the facilities as outstanding. The Laboratory already meets the Office of Science goal that all "Mission Critical" facilities are rated Good or better and all "Mission-Dependent, not Critical" facilities be rated Adequate or better. All of these elements coincide to make the Ames Laboratory an outstanding location for performing world-class research.

## **2.0 Site Summary**

The U.S. Department of Energy's Ames Laboratory is a Government-owned, contractor-operated facility located on the campus of and operated by Iowa State University (ISU) in Ames, Iowa. It is one of the Program-Dedicated Laboratories within the DOE Complex operating under the Office of Science Basic Energy Sciences Program. The total FY2005 operating budget of the Laboratory was \$30 Million. In FY2005, there were approximately 660 people on staff representing a full-time equivalent staff of 320. The number of people actively involved in operations is greater than the full-time equivalents because a significant number of people have less than full-time appointments. This includes graduate students, research associates and staff with split appointments with corresponding University Departments. The Ames Laboratory is integrated with the university community as a member of the Institute for Physical Research and Technology (IPRT). IPRT is a network of scientific research centers at Iowa State University. The Ames Laboratory, the foundation of the network, is the first and largest of the IPRT centers. In addition to performing world-class scientific research, IPRT provides a wide variety of technical assistance to Iowa companies. Iowa State University of Science and Technology is a land-grant university chartered in 1858. The campus includes nearly 2,000 acres and more than 160 buildings. Iowa State University is a recognized leader in many areas of science and

technology, including material sciences, analytical chemistry, physics, plant and animal genomics, behavioral studies, and many areas of engineering.

The organization that ultimately became the Ames Laboratory originated as a part of the Office of Scientific Research and Development in the early days of the Atomic Energy Program. The initial work at Ames was carried out in the Iowa State University Chemistry Building in 1942 and involved the development of a process for the production of uranium metal in large quantities. Following the successful development of the most efficient process to produce high-purity uranium metal in large quantities for atomic energy, Iowa State University established the Institute for Atomic Research in 1945. With the creation of the Atomic Energy Commission (AEC), the Ames Laboratory was formally established as one of the AEC multi-program laboratories in 1947, to be operated by Iowa State University through the Institute. In 1949, the University built a three-story, 30,000 gross square foot building to contain the new Institute and Laboratory. Expansion of the Ames Laboratory was accommodated in new buildings funded by the Atomic Energy Commission. The first federally-owned building was designed for laboratory occupancy and was constructed in 1949. Additional laboratory occupancy buildings were completed in 1953 and 1961. One of the research buildings had additions constructed in 1967, 1984 and 1988 with General Plant Project (GPP) funds. Several small auxiliary buildings were constructed with GPP funds during the 1960's. The last major addition was the construction of the Technical and Administrative Services Building in 1994 that houses most of the management, administrative, and technical support groups of the Laboratory. The Laboratory continues to be operated by Iowa State University.

Located in the heart of central Iowa, approximately 35 miles north of Des Moines, Ames Laboratory facilities occupy approximately 10 acres of land on the north edge of the Iowa State University campus in Ames, Iowa. The land on which the Government-owned buildings are located is under long-term, no cost lease to the Federal Government from the University. The lease line has been adjusted over the years to accommodate the facility needs of the Laboratory and the University is willing to adjust the lease as needed to accommodate new Laboratory facilities in the future. Figure 1, ISU Campus Map, shows the Ames Laboratory site relative to the rest of the campus and Figure 2, Ames Laboratory Site Plan, shows the individual Laboratory Buildings and how they are located within the University Campus. The integration of the Ames Laboratory site with the ISU campus is significant and generally beneficial. Some aspects of facilities management and maintenance are provided by ISU and are paid through contract overhead fees or on a direct-charge basis. Examples of areas maintained by ISU are streets and street lighting, parking and traffic control, most landscaping and grounds work, telecommunications, ordinary waste disposal and primary utility distribution lines. The Laboratory purchases steam and chilled water from the University district heating/cooling system, therefore, the Laboratory does not have to maintain large chillers or boiler plants.

The Ames Laboratory has 12 buildings and two real property assets categorized as Other Structures and Facilities (OSF). The buildings include three laboratory buildings, one office building, three shop buildings and five storage buildings. The OSF assets include an electrical switch pit and parking area. An aerial view, Figure 3, shows the four main buildings of the Laboratory and how the site is integrated with other University buildings on the campus. Table 1, Real Property Assets, lists detailed information regarding the age, use, construction and

replacement plant value of the buildings and OSF assets. The average age of the buildings is 37 years. When pro-rated by the amount of space, the average age of space at the Laboratory is 43 years. The average age of the three research buildings is 51 years. Figure 4 shows the breakout of the age of space at the Laboratory.

While the average age of space is relatively old, the buildings were well designed and constructed for long-term stewardship. Historically, the Laboratory has placed a high priority on maintaining the assets under its stewardship. As a result, even though the buildings are relatively old they remain in good condition. The Asset Condition Index for the Laboratory facilities is 97.3% or a rating of good according to the Summary Condition field in FIMS. The three research buildings are rated in either the excellent or good categories. In fact, only 5% of the building area is less than good. They are shop facilities that are rated adequate. The Office of Science's goal is that all "Mission Critical" facilities be rated good or better in the FIMS system (FCI equals 5% or less) and all "Mission-Dependent, not Critical" facilities be rated adequate or better (FCI equals 10% or less). The Laboratory already meets and exceeds this goal.

Because of the relationship with the University, Laboratory operations can also use space in University-owned buildings adjacent to the Laboratory through a space rental agreement. This is not a lease arrangement where the Laboratory commits to using a building for an extended period of time. The arrangement is recognition of the collaborative efforts between the Laboratory and the University in individual spaces that allows both parties to leverage their effectiveness, flexibility and capabilities through sharing resources. It enables the Laboratory to utilize additional space on a short-term basis without investing in permanent space. It also supports collaborative efforts with University personnel on new or short-term initiatives without modifying permanent space for it. The arrangement tracks the collaborative space used in Laboratory and University buildings and calculates a net amount used. The Laboratory makes at least partial use of over 57,000 square feet of University space. When this space is pro-rated for partial use and credit is taken for University supported activity in Ames Lab space, the net usage is projected to be 3,500 square feet in FY2006.

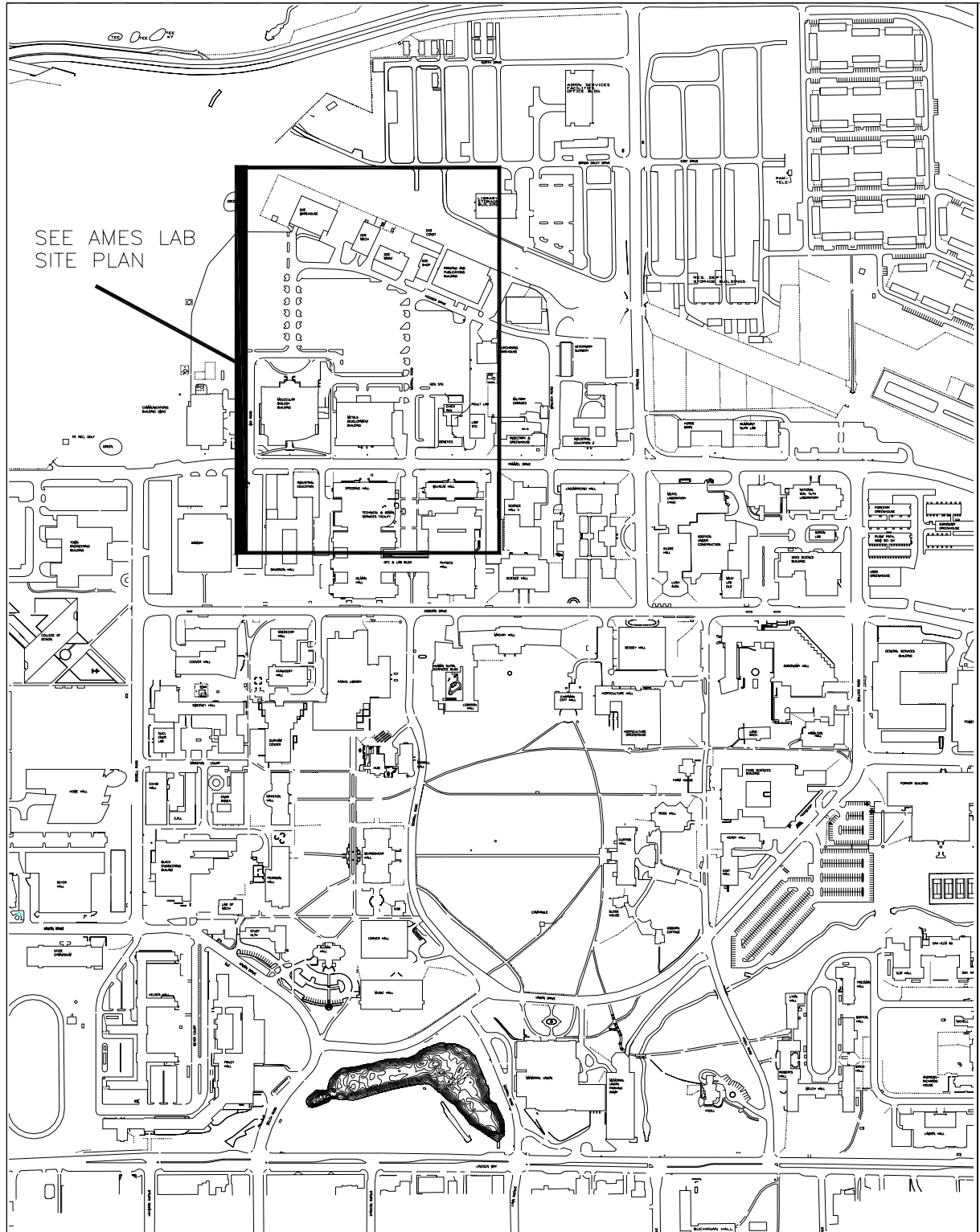


Figure 1. Iowa State University Central Campus Map

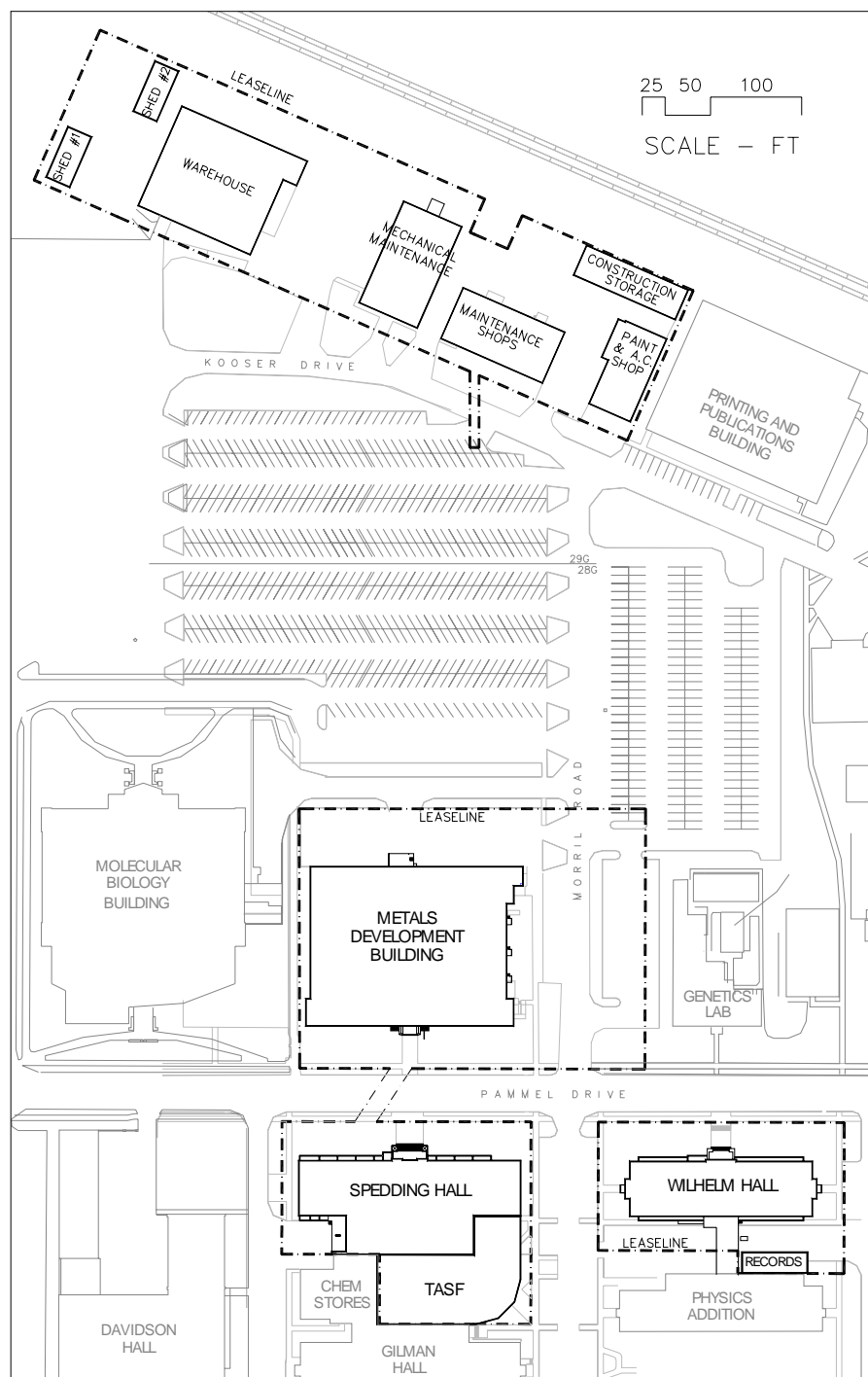


Figure 2. Ames Laboratory Site Plan





- A. Spedding Hall
- B. Metals Development Building
- C. Harley Wilhelm Hall
- D. Technical & Administrative Support Facility

Figure 3. Ames Laboratory Aerial View

Table 1. Real Property Assets

Assets	Facility use	Gross S/F	Year Built	Replacement Plant Value (\$000)	Mission Dependency	Construction Type
<b>Buildings</b>						
Campus Warehouse	Storage	16,506	1966	1,088.8	Mission Dependent Not Critical	Steel Light Frame
Construction Storage Shed	Storage	4,440	1967	83.9	Not Mission Dependent	Steel Light Frame
Maintenance Shops Building	Shop	7,503	1967	713.6	Mission Dependent Not Critical	Steel Light Frame
Mechanical Maintenance Building	Shop	8,540	1964	606.8	Mission Dependent Not Critical	Steel Light Frame
Metals Development Building	Laboratory	69,663	1961	10,471.1	Mission Critical	Concrete Moment Frame
Paint and Air Conditioning Building	Shop	4,998	1968	671.9	Mission Dependent Not Critical	Concrete Moment Frame
Records Storage Facility	Storage	1,689	1948	236.7	Mission Dependent Not Critical	Reinforced Masonry Bear Walls/Wood, Metal Deck Diaphragm
Shed 1	Storage	1,461	1990	18.4	Not Mission Dependent	Wood Commercial & Industrial
Shed 2	Storage	1,702	1991	24.0	Not Mission Dependent	Wood Commercial & Industrial
Spedding Hall	Laboratory	107,630	1953	20,052.2	Mission Critical	Concrete Moment Frame
Technical and Administrative Service Facility	Office	46,991	1995	6,639.0	Mission Critical	Concrete Moment Frame
Wilhelm Hall	Laboratory	56,541	1949	13,382.5	Mission Critical	Concrete Moment Frame
<b>OSF</b>						
Parking Areas			1971	524.6	Not Mission Dependent	
Power Switch Pit			1971	180.1	Mission Critical	
<b>TOTALS</b>		327,664		54,693.4		

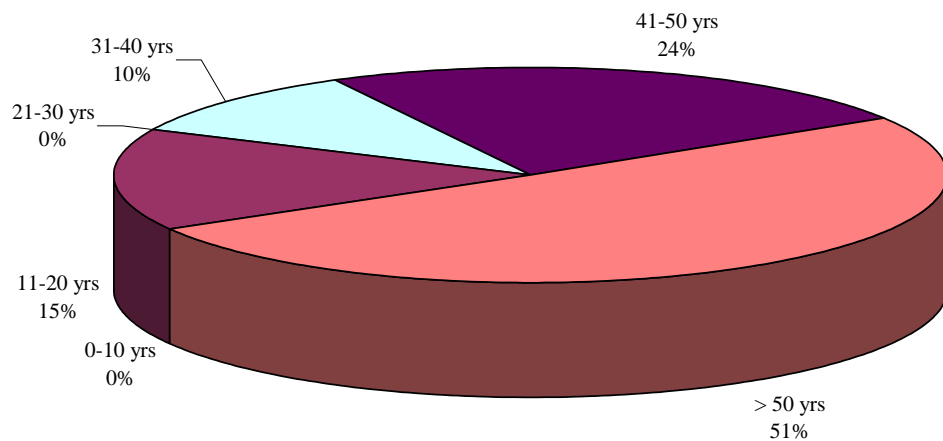


Figure 4. Facility Age (% total gsf)

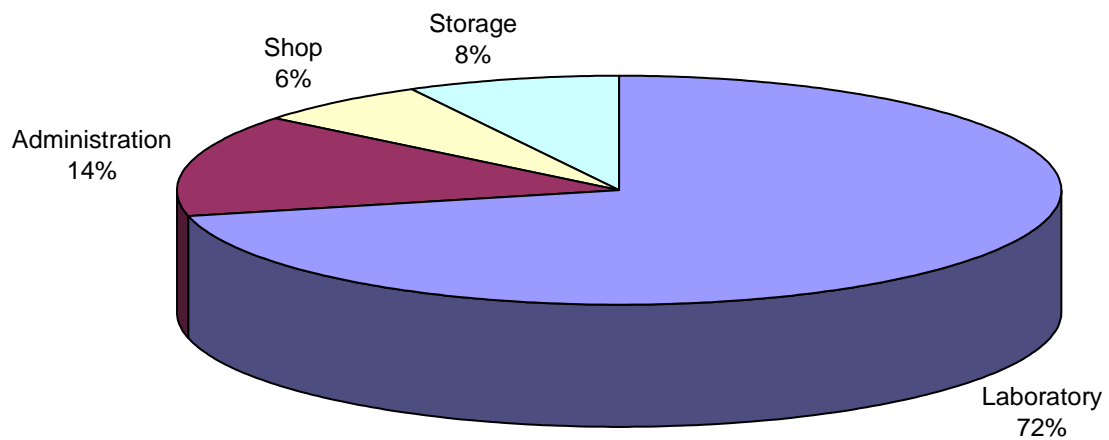


Figure 5. Laboratory Space Distribution

### 3.0 Mission

The Ames Laboratory's mission is to provide key advances in materials science research, especially in materials theory, synthesis, and characterization, of benefit to DOE missions. Important to the success of the Laboratory's mission is its Materials Preparation Center, which provides the highest purity materials to the research community, for catalytic science, and for development of pioneering analytical instrumentation and techniques. These efforts contribute to achieving the Department of Energy's Missions and Goals. More specifically, to increase the general levels of scientific knowledge and capabilities, prepare engineering and physical sciences students for future scientific endeavors, and initiate nascent technologies and practical applications arising from our basic scientific programs.

#### Vision for the Future

Our vision for the Ames Laboratory must be that of an interdisciplinary world-class materials research laboratory with an international reputation such that whenever "Ames" is mentioned, "materials" is the response. Ames will make extensive use of DOE's world-class user facilities, train young scientists, and open new frontiers in materials research. New opportunities for the design and control of nanoscale structures and interdisciplinary partnerships with life (plant) scientists will help develop new synthesis routes to bio-inspired materials, and bio-molecular energy sources and machines.

To this end, Ames Laboratory has proposed to DOE that a major national Plant Metabolomics Facility be constructed as a new facility of the Laboratory. We propose to combine the excellence in analytical chemistry, computational chemistry and virtual reality engineering in the Ames Laboratory with the rich tradition of plant science research at Iowa State University. Plant metabolomics is the determination of all of the metabolites (chemical products) in a cell or tissue at any given time in its development, and the determination of their roles in the entire genetic, developmental, physiological and environmental activities of the plant. The importance of the relatively young field of metabolomics is that by measuring and quantifying metabolites and metabolic fluxes one articulates the cellular pathways and networks that regulate and define a biological trait or phenomenon. This initiative is a daunting undertaking but one that is essential to our understanding of why plants do what they do, and controlling them so that they do what we wish them to do. Plant metabolomics will enable scientists to design plants to grow better in changing environments and serve as "biological factories" for the large-scale production of useful materials and alternative fuels.

In addition to this, Ames has proposed new initiatives in Bio-inspired Materials; Materials Discovery, Synthesis and Processing; and a Distributed Electrostatic Levitation (ESL) User Facility; and in Applied Mathematics and Computational Sciences. In Bioinspired Materials, Ames Laboratory management has made a decision to direct significant efforts and resources in material sciences to the synthesis and characterization of novel materials that mimic living systems, or bio-inspired materials. These materials possess the ability to switch among several states in response to the environment (pH, temperature), self-assemble and build complex structures hierarchically, and serve as directed templates for such synthetic processes as

biomineralization/biometallization. The plan is to grow this initiative in modules of approximately \$400K per year.

Materials have long been a strength of Ames Laboratory. In order to compete with foreign countries, in the materials field, the Laboratory proposes to improve the Nation's standing in critical areas such as efforts in crystal growing, and by providing well-characterized and high quality crystalline samples for facilities including DOE's synchrotron and neutron sources. Ames Laboratory already has the physical and intellectual infrastructure to lead this DOE materials effort.

We have also proposed to establish an ESL User Facility based in the Materials Preparation Center (MPC) of the Ames Laboratory, coupled with ESL facilities designed for high-energy x-ray scattering measurements located at the APS and neutron scattering measurements located at the SNS. Together, the proposed facilities will provide a powerful complement of tools for investigations of under cooled liquids, thermo physical properties, phase diagram determination, materials processing and fundamental studies of nucleation and growth. ESL is rapidly becoming the key technology for fundamental studies of solidification and the discovery of new metastable phases through significant undercooling of liquids.

#### Roles

Ames Laboratory's primary role within DOE's Office of Science, Basic Energy Sciences mission is to perform research within the materials, chemical and biological sciences "to provide the scientific knowledge and tools to achieve energy independence" and "to provide the biological and environmental discoveries necessary to clean and protect our environment, offer new energy alternatives, and fundamentally alter the future of medical care and human health."<sup>1</sup> To this end, the Laboratory's main goal is to deliver the scientific knowledge and discoveries in the basic energy sciences that underpin DOE missions in energy, national security and environmental quality, as well as technologies to improve human health and safety.

Ames Laboratory's scientific component is organized into 9 research programs:

- Applied Mathematics and Computational Sciences
- Biorenewable Resources Consortium
- Chemical and Biological Sciences
- Condensed Matter Physics
- Environmental and Protection Sciences
- Materials Chemistry and Biomolecular Materials
- Materials and Engineering Physics
- Multiphase Systems
- Nondestructive Evaluation (NDE)

Each uniquely contributes to many of the main goals of the DOE. The following paragraphs give a brief synopsis of the mission of each of these.

The Applied Mathematics and Computational Sciences focuses on issues of development, use and performance of advanced computer architectures with emphasis on application of parallel

---

<sup>1</sup> Department of Energy, Office of Science *Strategic Plan*, February 2004, p. 12.

computers that scale to massive numbers of processors. The program addresses problems arising in science and engineering, software development to provide a suite of software tools to manage the software installation, maintenance and resource allocation systems on large-scale parallel computers, and the development of tools to enable high performance applications on scalable architectures. Inherent within the program is the Scalable Computing Laboratory (SCL). They focus on high performance computing with attention given to looking at how to make a range of machines solve a range of problems with a range of performance tradeoffs, so that the computational research that is done has lasting scientific value.

The Biorenewable Resources Consortium (BRC) is dedicated to the development and utilization of agriculturally derived alternatives to petrochemicals and other non-renewable fossil resources as a means to address the nation's dependency on non-renewable resources. Over the long-term, the research thrusts of the BRC will change and evolve in parallel with the challenges and opportunities presented by the development of biorenewable industries.

The Chemical and Biological Sciences Program focuses on research spanning fundamental and applied projects to provide a fundamental understanding of the variety of processes that are basic to solar energy conversion in biological systems, with application to the development of new solar energy technologies. Chemical Physics is focused on the structure, bonding, reaction mechanisms and dynamics of chemically reactive systems in terms of their fundamental atomic, molecular, and electronic constituents.

The Condensed Matter Physics (CMP) program's emphasis is on discovery and understanding the basic science underpinning the development and optimization of materials for use in various energy technologies. Interdisciplinary teams have made tremendous contributions in quasicrystals, photonics, spin dynamics, surface phenomena, superconductivity, rare earth nickel borocarbides (exhibiting simultaneous magnetism and superconductivity), and in a host of other areas.

It is the mission of the Environmental and Protection Sciences Program to exploit expertise and developing science for the application of analytical science to problems in environmental characterization and monitoring, nonproliferation of weapons of mass destruction, homeland security, and forensic science.

The Materials Chemistry and Bio-molecular Materials Program works to extend the basic scientific knowledge of materials, with efforts to discover new, complex materials and developing an understanding of the factors that stabilize those materials.

An overarching theme of the research conducted within the Materials and Engineering Physics Program is to advance fundamental understanding of the complex linkages between the synthesis, structure, properties and performance of novel and advanced materials. Ultimately, the materials research in the Materials and Engineering Physics Program seeks to establish new tools and paradigms that enable the development of novel materials and structures with desired properties for improved performance, life span, and maintainability.

Multiphase Systems' goal is to advance the understanding of three-dimensional gas-solid reacting flows using basic theory and modeling. Initially, the Program focused on implementing synergically, two different computational fluid mechanics codes for multiphase flow taking advantage of Ames' Scalable Computing Laboratory.

Lastly, the Nondestructive Evaluation program at Ames Laboratory is at the forefront of research efforts to develop noninvasive measurement techniques for detecting and characterizing defects and mechanical properties of structural components.

In addition to the above scientific programs, the Materials Preparation Center (MPC) is a DOE Office of Science User Facility. They are recognized throughout the international research community for their unique capabilities in the preparation, purification, and characterization of rare earth, alkaline earth, and refractory metal materials for preparing ultra high-purity and well-characterized metals, alloys, compounds, and single crystals. The MPC continues to make these materials available to DOE Laboratories, other federal agencies, universities, and the private sector.

Table 2. Summary of Expected Program Funding and Staffing

	FY 05	Est. FY 06	Est. FY 07	Est. FY 08	Est. FY 09	Est. FY 10	Est. FY 11	Est. FY 12	Est. FY 13	Est. FY 14	Est. FY 15	Est. FY 16	Est. FY 17
Funding:													
SC – BES	23,538	20,760	26,660	28,860	32,135	38,860	32,800	33,585	34,390	35,220	36,065	36,930	37,815
SC – HEP													
SC – BER	800												
SC – NP													
SC – ASCR	1,681	1,450	3,380	3,475	3,560	3,645	3,735	3,825	3,915	4,010	4,105	4,200	4,305
SC – SC Lab Infrastructure	210	150											
SC – WDTs	65	65	65	70	70	75	75	75	80	80	80	85	85
SC – S&S Science	479	481	544										
SC – Fusion													
Total SC	26,773	22,906	30,649	32,405	35,765	42,580	36,610	37,485	38,385	39,310	40,250	41,215	42,205
Other DOE	1,687	2,250	2,306	2,405	2,465	2,520	2,580	2,645	2,710	2,775	2,840	2,910	2,980
Work for Others	1,466	2,329	2,385	2,440	2,500	2,560	2,620	2,685	2,750	2,810	2,880	2,950	3,020
Total \$: (Required)	29,926	27,485	35,340	37,250	40,730	47,660	41,810	42,815	43,845	44,895	45,970	47,075	48,205
Total Staffing: (FTE's Required)	320	320	362	369	374	374	379	379	379	379	379	379	379

There is significant growth potential in the research initiatives being pursued by the Laboratory. While it is not possible to predict with certainty the growth of any of these initiatives, it is possible to plan for flexibility and the capability to support growth in these initiatives. The Laboratory has a unique resource in its ability to utilize space in University-owned buildings adjacent to the Laboratory through a space rental agreement. It enables collaborative efforts between the Laboratory and the University in individual spaces that allows both parties to leverage their effectiveness, flexibility and capabilities through sharing resources. This is ideal for cost effective support of new initiatives. If the research initiatives grow beyond these resources then new facilities can be added as is proposed with the Plant Metabolomics Facility.

This facility is described in Section 5.14. The campus master plan will allow the facility to be sited adjacent to existing Laboratory buildings. This area of campus is slated for major research facilities. Utility infrastructure that serves this portion of the campus is able to support the facility.

In general, resources throughout the Laboratory are allocated to maximize the overall mission effectiveness. This philosophy is applied across all departments and functions not just with respect to infrastructure maintenance and improvement. Maintenance and improvement expenditures are reviewed and approved on a project specific level based on the effect each project or activity has on the mission. The Laboratory has designated its assets as “Mission Critical”, “Mission Dependent, Not Critical”, and “Not Mission Dependent” (See Table 1). Those facilities and assets that have a direct effect on the research activity are designated “Mission Critical”. Those that have an indirect but significant effect are designated “Mission Dependent, Not Critical”. Those that have a minor or no effect on the research activities are designated “Not Mission Dependent”. With the small size of the facility, decisions on the allocation of resources are not made on the basis of the designation of the assets but rather by looking at the results of the activity on a case by case basis. Focusing on the results more than the inputs is in keeping with the principles of good performance-based measurements.

#### **4.0 Land Use Plans**

The Laboratory supports the Department of Energy policy to manage all of its land and facilities as valuable national resources and takes this stewardship seriously. The land on which the Government-owned buildings sit is under long-term lease to the Federal Government from Iowa State University and is located wholly on the campus of the University (See Figure 1). There is no federally-owned real estate at the Ames Laboratory. There is no undeveloped area within the lease line or adjacent to the leases (See Figure 2). The area is developed with buildings, sidewalks, drives, parking, railroad right-of-way, and landscaping. The lease line has been adjusted over the years to accommodate the facility needs of the Laboratory, and the University is willing to adjust the lease as needed to accommodate new Laboratory facilities in the future. According to the Master Plan for the University, the area of campus near the Ames Laboratory is being reserved for major research facilities. Because of this unique partnership, the Laboratory and the University work together regarding site development issues around the lease area of the Laboratory. The Laboratory's interests in the University's overall site-planning considerations are represented by the interactions of Laboratory officers and senior staff members with the major University committees and bodies that are responsible for campus planning, physical facilities, long-range development, and space utilization. Also, the Ames Laboratory Chief Operations Officer, the Facilities Services Group (FSG) Manager and other FSG engineers meet with campus planning personnel from ISU's Facilities Planning and Management (FP&M) on a periodic basis. These meetings are used to discuss the status of the Campus Master Plan, facility and utility developments on campus, and provide for the real estate needs of the Laboratory. Laboratory executive management is briefed on significant developments by the Chief Operations Officer who is a member of the Executive Council.



Responsible stewardship also addresses other land and facility use issues. There is no historic preservation or cultural asset issues at the site. National Environmental Policy Act (NEPA) evaluations are submitted and approval received on all capital improvement projects at the Laboratory prior to construction. Landscaping and grounds maintenance is the responsibility of the University not the Laboratory. Plantings are selected and ground maintenance is accomplished without using irrigation other than for establishing new plantings. Assets will be managed to serve the ongoing research mission of the Laboratory into the foreseeable future. No reuse of the site for other purposes is projected for the duration of this plan.

Prior documentation specifically related to land use was the Site Development Plan, 1996. There were no subsequent calls for updating the Site Development Plan. Applying a tailored approach to the local site conditions, this section of the Ten Year Site Plan will continue to serve as the Land Use Plan of the Laboratory.

## **5.0 Facilities and Infrastructure (F&I)**

### **5.01 Strategic F&I Goals/Issues**

The Ames Laboratory will be an effective steward of the DOE assets entrusted to the Laboratory. The real property assets must be managed to support the infrastructure needs of the ongoing mission of the Laboratory. The Laboratory will manage the assets with a long-term view which is quality driven, takes into account the life cycle of the assets, utilizes best industry practice and is commensurate with the value and importance of the asset. The management of real property assets will take a corporate, holistic, and performance-based approach to real property life-cycle asset management that links real property asset planning, programming, budgeting, and evaluation to program mission projections and performance outcomes. This requires that resources applied to facilities and infrastructure must be evaluated and set in the context of the overall needs and operation of the Laboratory to carry out its mission.

Ames Laboratory facilities will be safe, secure, and environmentally responsible. The facility will be managed to maximize effectiveness and efficiency, building on the strengths of the unique partnership with ISU so that the Ames Laboratory will continue to be the most cost-effective Laboratory in DOE. The Laboratory is committed to a long-term perspective toward maintaining the facilities, thus avoiding decisions with short-term benefits that have long-term consequences. The facility will be maintained in excellent to outstanding condition as described by the Facility Condition Index. Infrastructure improvements will be done to keep pace with advancing technology and new paradigms of scientific collaboration so the research efforts are not restricted. The facility and facility management activities must be flexible and adaptable to enable research programs to respond efficiently to new developments and changing priorities in the increasingly dynamic research environment.

As a single purpose laboratory under the Office of Science, the Laboratory operates under a single “landlord.” All facilities are managed centrally. With a small site, Laboratory Management is actively involved in Facilities and Infrastructure issues at a very detailed level. There are no cross-program issues.

In developing this plan the following assumptions were used:

- The existing research activities as organized in the nine research programs within the Laboratory (See Section 2) will continue on a stable funding path with adjustment for inflation or modestly above inflation. This is based on the fact that our core competencies continue to be vital to the DOE.
- In keeping with the vision of the Laboratory, the Laboratory will continue to extend its capabilities in a variety of new directions where it has a competitive advantage. New program initiatives in Metabolomics energy-related plant sciences; Bio-inspired Materials; Materials Discovery, Synthesis and Processing; a Distributed Electrostatic Levitation User Facility; and in Applied Mathematics and Computational Sciences will be critically important paths for the Laboratory's continuing success in meeting the DOE's missions and goals. Existing facilities will be utilized as these new initiatives are developed. As these initiatives grow, the increased funding will help support the related facility and infrastructure needs.
- Ames Laboratory has proposed to DOE that a major national facility for plant metabolomics be built as part of the Laboratory on the campus of Iowa State University, the Laboratory's Contractor. This major construction project is included in this plan.

Key facility and infrastructure issues for the Laboratory include:

- Providing adequate space for new initiatives and flexibility to accommodate changes in existing research programs. The Asset Utilization Index for the Laboratory is currently 0.994 meaning that less than 1% of the net usable space is unassigned.
- Balancing the priorities of all facets of Laboratory operations in budgeting for facility and infrastructure activities in a way that best supports the research mission on a long-term basis and also addresses the DOE corporate guidelines. Laboratory upper management takes an active and detailed role in balancing the priorities of all facets of Laboratory operations in budgeting for maintenance activities. The priority of each overhead-funded maintenance project is evaluated with respect to other activities and its impact to the overall mission of the Laboratory. Resources are applied so that infrastructure meets the needs of the research efforts and building occupants. The Maintenance Investment Index (MII) resulting from this process has historically been in the 1.5-1.6% range. At this level of spending, deferred maintenance is being controlled at a FCI between 2% and 3%. A major expenditure is being made in a new Computerized Maintenance Management/Work Management system that has boosted the MII to between 1.9% and 2%.
- The Office of Science five year budget plan and the President's American Competitiveness Initiative calls for a doubling of the SC budget over a ten year period. It will be important for the overall Laboratory budget to also reflect this increase in order to fund the facility and infrastructure initiatives without disproportionately increasing the overhead burden.

## **5.02 Condition Assessment Process**

The Laboratory maintains real property assets in a manner that promotes operational safety, worker health, environmental compliance, property preservation and cost-effectiveness while

meeting the program missions. The maintenance management program includes a Condition Assessment Survey (CAS) of the real property assets.

The condition and needs of the facility are well understood by the Facilities Services Group (FSG) and Laboratory Management. Because the site is small, the in-house workforces are long-term employees, and, in many cases, systems are installed and maintained by the same workforce. The FSG crafts and engineering personnel have excellent knowledge of the conditions and infrastructure needs of the entire site. Individual elements of the facility are inspected periodically; i.e., weekly, quarterly, annually, etc., as part of the preventive maintenance program.

This knowledge provides a strong foundation for the systematic, comprehensive process of Condition Assessment Surveys. CAS is done on each building on a three-year cycle. Approximately one third of the space is surveyed each year. In-house personnel do most of the inspection work. Outside consultants are retained as needed to do supplementary inspections of specific systems or types of equipment on a site-wide basis. Consultants have been utilized for elevators, fire safety systems, and electrical systems. The condition assessment survey process is organized around four main building segments. These segments are areas, systems, infrastructure and exterior. Area inspections include all spaces used in accomplishing the Ames Laboratory mission or areas used to support the mission. Examples of these spaces are offices, research space, mechanical/utility and custodial space, and common or public use space. Inspection of these spaces includes examination of all finish surfaces; all utilities within the area including lighting, plumbing, piping, etc.; doors; hardware; HVAC and all permanent furniture; e.g., lab furniture within each area. Utility chases both within work areas and in common areas are included in the area inspection. System inspections include all utilities distributed within the building from the building entrance to the work area entrance. Infrastructure inspections examine the structural aspects of the building. Exterior inspections assess the condition of the exterior skin of the building including the immediate grounds outside the building such as steps, areaways and shipping docks.

A team approach is utilized to perform the inspections. The personnel selected for the inspection team is matched to the evaluated asset. The inspection team for area inspections generally includes an electrician, a craft worker experienced in mechanical systems such as plumbing and environmental systems, a locksmith, and a craft worker experienced in general construction. Results are recorded on inspections sheets, with information on component, location, description of deficiency, corrective action required and estimated cost. System inspections utilize experienced craftspeople or shop managers associated with the inspected system. For example, the shop manager or an experienced facility mechanic inspects HVAC systems with help from an electrician for the electrical supply and control components. Construction personnel inspect infrastructure components and building exteriors, again with help from electricians for such things as exterior lighting and lightning protection. This team approach and the knowledge and experience of the team members ensure a thorough and accurate inspection providing a great deal of detailed information.

All recorded deficiencies are classified into six ratings categories, ESH&A Critical, ESH&A Affected, Mission Critical, Mission Affected, Cost Preventative, and Aesthetics. ESH&A

Critical designates a deficiency that creates a serious or potentially serious safety or health problem that should be corrected immediately. ESH&A Affected covers deficiencies that could create a serious or potentially serious safety or health problem that should be corrected in a reasonable time frame. Mission Critical pertains to deficiencies that seriously curtail research or operations. Mission Affected deals with items that hamper or encumber research or operations. Cost Preventative is a corrective action that is used to designate older features that are not cost effective when compared to currently available components. Aesthetics are corrective actions used to create a more pleasing surrounding. All six ratings are included in the CAS inspections and surveys, but the Cost Preventative and Aesthetic items are not considered deferred maintenance items.

The three-year reinspection of all buildings also includes a thorough review of the previous inspection data to insure that any deferred maintenance items that have been corrected within that three-year period are closed in the database. Many maintenance items cited in the inspections may be corrected as part of upgrade or program remodel projects. Because of this, renovation projects are reviewed upon completion and “matched” with previously identified maintenance items within their scope of work. These items are then closed within the deferred maintenance database.

In addition to the exhaustive inspection process, all identified maintenance items that have an estimated cost of \$8,000 or greater are subject to a validation review. The validation process is designed to address several aspects of the inspection procedure. First, validation is used to verify that the deficiencies reported can be considered deferred maintenance items. An example of a deficiency that would not be a deferred maintenance issue would be the lack of adequate utilities in a given area for a specific program function. While this could potentially affect the mission of the Laboratory and should be corrected, it is not a deferred maintenance issue. Second, once the deficiency has been properly identified, the validation review confirms that the proposed corrective action is the best solution available. This confirmation may include a comparison of the proposed corrective action with other suitable solutions. The comparison would evaluate the costs, suitability, and value of several possible actions, implementing the best one. Third, validation re-estimates the cost of the corrective action. A more detailed estimating criteria would not only include the basic labor and material estimates of all deferred maintenance items, but may also include cost comparisons of individual material items and possible vendor or subcontractor estimates. It may also compare the feasibility of using outside contractors as opposed to in house labor. Fourth, alternative long-range solutions are investigated during this process. This investigation can determine whether a direct replacement or repair is the most beneficial to the vision and continued usability of the Lab. The possibilities of modification or possible elimination of the items inspected may be addressed at this point. This step, if implemented, would revert the process back to step one until arriving at a feasible solution and the associated estimated cost is calculated.

Also, to more accurately reflect actual deferred maintenance costs, a 7% engineering contingency is added to all items estimated at \$8,000 or greater. The costs of project design, management and support are absorbed in this contingency.

### 5.03 Condition Overview

The consistent level of maintenance of the Ames Laboratory facilities is reflected in the overall quality condition of the structures and facilities. The facility conditions rate from “adequate” to “excellent” according to the FIMS rating scale. None of the Laboratory facilities were considered “fair” or “failing.” The only structures receiving an “adequate” rating were two of the smaller support buildings, the Maintenance Shop Building and the Mechanical Maintenance Building. Because of the size and value of these buildings, the deferred maintenance of these two building make up only a small portion of the whole picture, and does not in any way hamper the use of the buildings or vision of the Laboratory.

The four mission critical buildings, TASF, Wilhelm Hall, Spedding Hall, and Metals Development, rated extremely high in the FIMS rating. Both Wilhelm and TASF are rated in excellent condition while Spedding Hall and Metals Development are rated in good condition. It is anticipated that, because of upgrade renovations underway, Metals Development will join the other research buildings in the excellent category. The maintenance of these core buildings remains the key element of continued high condition levels.

The high standard of facility condition is reiterated in all of the remaining structures and facilities. All facilities consistently have high ACI values (see Table 2) and are maintained to admirably high condition levels.

As shown in Table 3 and Table 4 the deferred maintenance and Facility Condition Index continue to be well managed. A significant decrease in deferred maintenance occurred between FY2003 and FY2004 from a combination of factors. A significant amount of deferred maintenance was eliminated through capital improvement projects, with the most significant associated with the Spedding Elevator Upgrade. There were changes in operations that allowed the disposition of infrastructure components that were no longer needed thus eliminating the deferred maintenance associated with those components. There were also significant overhead funded projects that eliminated deferred maintenance.

The projected Facility Condition Index is based on the following methodology. The Laboratory has been able to complete items of deferred maintenance at the current level of effort. When these reductions are balanced against new deficiencies identified in the CAS process, there is still a general downward trend in the deferred maintenance backlog. It is assumed that this will continue under our core maintenance funding. The projections apply this reduction to the backlog and then escalate the dollar value into the next year using budget escalation values. The proposed DMR funding is then targeted to deferred maintenance reduction projects currently on the backlog into FY2010. By FY2010 it is anticipated that some additional deficiencies will be identified on the deferred maintenance backlog that will be a priority for DMR funding. The specific deferred maintenance values are shown in Appendix 1 and the specific projects for DMR funding are shown in Section 6.0

It should be noted that these high ratings were attained despite a rigorous and thorough inspection process designed to identify and log all deficiencies whether they are large or small, or whether they have extensive or minimal impact on Laboratory operations. In September

2004, Max Rosenquist, Chicago Office matrix support staff to the Ames Site Office, performed a site visit to gain operational awareness of the Condition Assessment Surveys and Deferred Maintenance Reporting. Rosenquist states in the Operational Surveillance Log report that, “The list of deficiencies was validated as being very complete, including many minor deficiencies that probably would be ignored at other sites.” This observation of the inspection system provides additional confidence in the integrity of the condition ratings given the Laboratory facilities. However the Surveillance Log report also states, “Additional expertise would be needed to validate the majority of the deficiencies which are associated with ‘Systems.’” Utilizing the services of a facility inspection contractor should be considered.” It was also noted in the report that the vast majority of listed deficiencies are of relatively low priority. Most items listed are considered low risk and low impact. These items present minimal safety risk and do not hamper the purpose of the Laboratory operations.

Table 3. Summary Condition Table

Asset	Deferred Maintenance Cost (DM) (\$)	Replacement Plant Value (RPV) (\$000)	Facilities Condition Index (FCI)	Asset Condition Index (ACI)	FIMS Rating	Rehab & Improvement Cost (RIC) (\$000)	Total Rehab & Improvement Cost (TRIC) (\$000)	Total Summary Condition Index (TSCI)
<b>Buildings</b>								
Campus Warehouse	21,680	1,088.8	1.99%	0.98	Excellent	105.0	116.6	11.6%
Construction Storage Shed	3,514	83.9	4.19%	0.96	Good	0.0	3.5	4.2%
Maintenance Shops Building	52,150	713.6	7.31%	0.95	Adequate	110.0	145.5	22.7%
Mechanical Maintenance Building	59,139	606.8	9.75%	0.93	Adequate	0.0	43.4	9.7%
Metals Development Building	492,337	10,471.1	4.70%	0.95	Good	1,719.0	2,176.1	21.1%
Paint and Air Conditioning Building	26,099	671.9	3.88%	0.96	Good	0.0	27.0	3.9%
Records Storage Facility	2,060	236.7	0.87%	0.99	Excellent	0.0	2.2	0.9%
Shed 1	0	18.4	0.00%	1.00	Excellent	0.0	0.0	0.00%
Shed 2	0	24.0	0.00%	1.00	Excellent	0.0	0.0	0.00%
Spedding Hall	557,001	20,052.2	2.78%	0.97	Good	3,653.0	4,199.6	21.0%
Technical and Administrative Service Facility	11,111	6,639.0	0.17%	1.00	Excellent	100.0	107.8	1.7%
Wilhelm Hall	228,621	13,382.5	1.71%	.98	Excellent	1,065.0	1,313.3	9.7%
<b>OSF</b>								
Parking Areas	0	524.6	0.00%	1.00	Excellent	0.0	0.0	0.00%
Power Switch Pit	0	180.1	0.00%	1.00	Excellent	0.0	0.0	0.00%
Totals	1,453,712	54,693.4	2.66%	0.97	Good	6,752.0	8,134.9	15.0%

#### **5.04 Facilities Management, Space Management & Utilization**

Facilities Management, Space Management and Utilization is managed centrally rather than distributed. The Executive Laboratory Management is the center of these responsibilities with support from the Facilities Services Group and the Office of Sponsored Research Administration. The Deputy Director is responsible for making space assignments. Space is assigned on a room by room basis to one of the nine research programs in the Science and Technology Division or to one of the administrative departments. Research Program Directors and administrative Department Managers have responsibility over the space assigned to them regarding its use within their organization; e.g., specific office or lab assignments and room access (keying). Space vacated due to changes in research or operations reverts back to an unassigned status for reassignment by the Deputy Director. The Deputy Director may also reassign and redistribute space from one program or department to another based on changing programmatic or operational needs. Laboratory Executive Management is well informed on the research and operations activities and the associated space needs and assignments. Members of the Executive Council participate in the annual safety walk-through that inspects every space in all of the buildings each year. They review resource needs of each program area and department through the annual budget review and approval process. The Deputy Director personally reviews the areas involved with space assignments and deals directly with the stakeholders.

The Office of Sponsored Research Administration provides support for space management activities through the management of the Space Utilization Agreement with the University. As mentioned earlier, many of our researchers share joint appointments between the Laboratory and the University. Because of these joint appointments, shared space is tracked room by room (both University occupied Ames Laboratory space and that utilized by the Laboratory in University buildings), based upon the percent of use and time (number of months) of use for determining the net use of shared space between the Laboratory and University. The Office has developed and currently maintains a space database and is in the process of expanding its capabilities to incorporate information needed to be tracked by room or building by administrators in Environment, Safety and Health, Facilities Services and Information Systems. The Facilities Services Group maintains updated floor plans of all facilities. The Office of Sponsored Research Administration also manages the Facility Information Management System (FIMS) which is the “corporate” database for real property data within DOE. The Office is responsible for participating in various FIMS teleconferences and training conferences, and for populating, maintaining and auditing the FIMS database. Data is provided by the appropriate source departments; e.g., Facilities Services Group and Accounting.

The Laboratory does not have a space charge system in place. Space is assigned and unassigned on a need basis as described above. All maintenance, utilities, custodial, and other services associated with space are funded from indirect overhead funds.

The Asset Utilization Index is calculated on a net usable basis. It can be calculated on a building by building basis or rolled up to a site-wide number. Since net usable space is assigned on a room by room basis, the net assigned space is divided by the total net usable space to determine



the Asset Utilization Index in each building. The net areas from each building are then rolled up to calculate the site-wide number. The current Asset Utilization Index for the site is 0.994.

### **5.05 Facilities Supporting Mission Activities**

The Laboratory operates under a single executive management structure to carry out the mission as described in Section 2. There are no separate laboratory “directorates” based on program support, facilities assigned, location or any other designation. All of the facilities are managed centrally. The Laboratory Executive Management has the responsibility to fund, operate and manage all of the Laboratory facilities to accomplish the DOE program mission activities of the nine research programs in the Science and Technology Division with the assistance of the administrative departments. This responsibility extends from the Laboratory Executive Management through the Ames Site Office to the Office of Science, in particular, the Lead Program Secretarial Officer.

### **5.06 Site Utility Systems**

The Laboratory has no general site-wide utilities or distribution network. Electricity is purchased from the City of Ames Municipal Electric Utility and is supplied to the buildings through underground feeders from the adjacent city-owned substation. Alliant Energy supplies natural gas to meters at the buildings.

The integration of the Ames Laboratory site with the University campus enables the Laboratory to utilize the utility infrastructure of the campus. The University provides potable water and sewer, ordinary waste disposal, natural gas to the research buildings, streets, most of the parking, street lighting, traffic control, compressed air, telecommunications, steam and chilled water. Some of these are provided through contract overhead fees and some are purchased on a direct-charge basis. The Laboratory avoids the capital investment, management, maintenance, operating expense and recapitalization that these systems require. Of particular benefit is the fact that the Laboratory does not require large chillers or boiler plants, items that have high maintenance demands. In effect, it is a form of third party financing as the University funds the infrastructure that serves the Laboratory and the campus. For example, the University recently built a \$13 million chiller plant to serve the north part of campus where the Laboratory facilities are located.

### **5.07 Leasing**

The Laboratory currently has no leased facilities and there are no plans to lease any facilities in the foreseeable future.

## 5.08 Disposition

All of the Laboratory facilities on the University's central campus are operating facilities and will continue in that status throughout the duration of this plan. There are no facilities on the site that are managed by EM. The Laboratory has contractual responsibility for two buildings located at the University's Applied Sciences Complex located approximately 1.5 miles northwest of the Ames Laboratory facility and the University central campus. The site was the location of the Ames Laboratory Research Reactor and associated support buildings built in the early 1960's by the Atomic Energy Commission, a DOE predecessor. Like the campus site, the reactor was on land under long-term lease from the University. The research reactor site was operated by the Laboratory during the 1960's and 70's. After shutdown of reactor operation, the reactor site was decommissioned and the real property was transferred to the University. As part of this transfer agreement, the Laboratory retained the use of two buildings, the Waste Handling Facility and the Hydrogen Test Cell Facility through a beneficial use agreement. The Laboratory also retained responsibility for maintenance, decontamination and disposition of them. They are not listed in the Facility Information Management System. The buildings no longer retained any use to support program missions. Excess Facilities Disposition funds have been received (FY2004 & FY2005 for Waste Handling Facility & FY2006 for Hydrogen Test Cell Facility) to dispose of the buildings. The Laboratory was able to utilize single contract to demolish the two buildings at the same time. This saved mobilization, site restoration and project management costs allowing the work to be done more efficiently.

As the demolition contract for the two buildings is just being completed space bank issues have not yet been addressed. Because these buildings were under a beneficial use agreement and not listed in FIMS, the Laboratory will work with DOE oversight personnel to address the issues regarding using this as offsetting space and banking it. The total area of the two buildings is 9,900 square feet. No other disposition projects are anticipated during the time period covered by this plan.

## 5.09 Facility Designations

All of the facilities of the Laboratory are owned and managed under the Office of Science. There are no facilities managed by EM or designated with landlords other than SC. All of the facilities are general-purpose conventional facilities. There are no program specific facilities such as an accelerator beam line. The FIMS Conventional Facilities Indicator equals one for the entire site. There are no facilities that fall under the DOE Order 433.1, Maintenance Program for Nuclear Facilities.

Mission essential facilities as currently defined in FIMS are those assets that are currently used in support of mission accomplishment. All facilities where the FIMS Building Status is "Operating" and is projected to continue in that status for the duration of this plan are designated Mission Essential. Therefore, all of the assets listed in Table 1 are designated Mission Essential under the old FIMS field. This designation, as a binary indicator, does not provide sufficient distinction to determine resource allocation on a facility-to-facility basis. The new field in FIMS

provides greater granularity with designations of “Mission Critical”, “Mission Dependent, Not Critical” and “Not Mission Dependent.” See Section 3.0 and Table 2 for more detail. Even with this designation for FIMS assets, individual projects and functions are still evaluated in the context of the overall Laboratory operation with respect to their impact on the overall mission along with their impact on codes and regulations, public safety, worker safety, and environmental stewardship. Laboratory executive management takes an active role providing oversight and direction in balancing these priorities.

## **5.10 Maintenance and Deferred Maintenance Reduction**

Sustainment consists of maintenance and repair activities necessary to keep an existing inventory of facilities in good working order. It includes regularly scheduled maintenance, corrective repairs and periodic replacement of components over the service life of the facility. The facility management, engineering, documentation and oversight required to carry out these functions are also included. The service lives of all Ames Laboratory facilities are expected to be extended for the duration of this plan and beyond. A summary of existing and projected maintenance expenditures, MII, deferred maintenance and FCI for the plan period is shown in Table 3. All maintenance expenditures are shown in escalated dollars using budget office escalation values and Whitestone construction escalation values. Whitestone construction escalation values are based on actual construction cost data and are used to update plant replacement values to present values. Plant replacement values are projected into the future using the escalation rates provided by SC. The current deferred and actual maintenance values are based on current in-house labor rates. Future maintenance budgets and deferred maintenance are projected using escalation factors developed by the Ames Laboratory Budget Office. These factors use the DOE escalation numbers for material costs, but use local rates for labor escalation based on the State of Iowa's negotiated contractual agreement for the non-exempt employees of Ames Laboratory. As a result, the overall escalation rates for maintenance expenditures and deferred maintenance are higher than SC escalation rate assumptions.

Deferred maintenance information is generated through the Condition Assessment Survey (CAS) activities and data is contained in the CAS database. A detailed description of this system is contained in Section 5.02. As discussed early, inspection findings are classified and prioritized under one of six categories:

- ESH&A Critical
- ESH&A Affected
- Mission Critical
- Mission Affected
- Cost Preventative
- Aesthetics

All items in the top four categories are deferred maintenance deficiencies and included in the deferred maintenance backlog regardless of size. Items that are simply cost preventative or a matter of aesthetics are not considered to be deferred maintenance deficiencies. These categories are used to focus resources on the higher priority deficiencies. The effectiveness of this was confirmed during an Operational Surveillance site visit by Max Rosenquist of the Chicago Office to review Condition Assessment Surveys and Deferred Maintenance Reporting. The report

states, “The Facilities Services Group considers the majority of the deficiencies to be relatively low priority. This assessment was validated by the reinspection.”

The CAS database has fields used to capture the funding categories used to correct the deficiencies. This information is entered manually in the same way completion dates are entered. This allows annual reporting of deferred maintenance reduction by funding category. The current system does not automatically link detailed work orders to the CAS database. In the current process, there are redundant methods of closing the loop on completed deferred maintenance deficiencies. The deficiencies that are addressed directly through a specific repair ticket or job order are adjusted when the ticket is closed or the job order completed. Deficiencies may also be corrected as part of a larger project not specifically targeting the deferred maintenance. Because of the size of the site, the project planning, craft shop management, CAS inspection, and CAS database management all reside in the Facilities Services Group. Often, the operational awareness regarding the facilities and the deficiencies enables the staff to close out the deficiency. Another method of capturing corrected deficiencies is an annual “desk review” by the staff doing the inspections as well as the projects. Staff will review a printed report of outstanding deficiencies and note those that have been corrected. The final method of capturing corrected deficiencies occurs when the facility is reinspected on a three-year cycle. Inspectors are provided with a report of outstanding deficiencies prior to reinspecting. The inspectors either validate that the deficiency is still outstanding or note that it has been corrected.

Table 4. Maintenance and Deferred Maintenance Summary \*

FY	RPV	Maintenance Investment	MII	DM	DMR	FCI
2001	49,996.3	567.4	1.13%	1,573.2		3.15%
2002	50,346.1	622.9	1.24%	1,537.1		3.05%
2003	51,655.2	771.4	1.49%	1,567.8		3.04%
2004	52,946.6	831.7	1.57%	1,382.9		2.61%
2005	52,987.9	1,023.0	1.93%	1,453.7		2.74%**
2006	52,987.9	961.0	1.81%	1,406.3	95.0	2.65%
2007	52,987.9	1000.0	1.89%	1,396.5	57.0	2.64%
2008	54,693.4	1035.0	1.89%	1,406.0	38.0	2.57%
2009	55,951.3	1071.0	1.91%	1,413.8	40.0	2.53%
2010	57,238.2	1108.0	1.94%	1,419.9	42.0	2.48%
2011	58,554.7	1147.0	1.96%	1,320.5	144.0	2.26%
2012	98,401.5	1538.0	1.56%	1,304.6	60.0	1.33%
2013	100,664.7	1591.8	1.58%	1,285.1	63.0	1.28%
2014	102,980.0	1647.5	1.60%	1,279.4	49.0	1.24%
2015	105,348.5	1705.2	1.62%	1,271.3	51.0	1.21%
2016	107,771.5	1764.9	1.64%	1,261.0	53.0	1.17%
2017	110,250.3	1826.7	1.66%	1,248.2	55.0	1.13%

\* Projected values are escalated.

\*\* FCI as reported in the FIMS database using actual FY2005 RPV = 2.66%

The DMR column in Table 4 is an estimate of the projected reduction in deferred maintenance from all funding sources. This includes direct funding, indirect funding and GPP. Direct funds were received for a DMR project in FY2006 that will enable the Laboratory to eliminate a greater amount of deferred maintenance in FY2006 and FY2007. Per the Office of Science guidance, this TYSP does not include any direct funding for deferred maintenance reduction in

future years. The SC guidance does specify minimum funding for deferred maintenance reduction by site. Because the ACI of the Laboratory is above 0.95 and there are no special circumstances, Ames Laboratory does not have a minimum required deferred maintenance reduction. Even though a special deferred maintenance reduction program is not required, the Laboratory continues to work toward reducing deferred maintenance levels. The historical data shows that the Laboratory has been able to control and slightly reduce deferred maintenance levels with modest levels of indirect funded maintenance, allowing Ames to operate with a 1.8% target MII. The Laboratory is in the process of purchasing and implementing a new Computerized Maintenance Management System (CMMS) that has caused a significant increase in maintenance spending and MII particularly in FY2005. The projected maintenance funding will meet the target value of 1.8% until FY2012. At that time the proposed line item construction project, the Ames Plant Metabolomics Resource Facility, will add an estimated \$38.5 Million in replacement plant value to the inventory. As a new facility, it would add no deferred maintenance and very little repair maintenance. The jump in maintenance investment is primarily for scheduled or preventive maintenance in the new building. As a result, both the site-wide Facility Condition Index and Maintenance Investment Index drop significantly.

Laboratory Executive Management takes an active and detailed role in balancing the priorities of all facets of Laboratory operations in setting budgets for maintenance activities. Facilities staff prepares budget requests for the core functions and tasks for sustainment of the facilities and infrastructure. These core tasks are activities that are ongoing from year to year and are budgeted using historical data, knowledge of changing conditions or requirements and experience. Individual maintenance projects are defined and budgeted based on Condition Assessment (deferred maintenance) results, knowledge of facility needs, and input from Laboratory research and administrative staff. The priority of each overhead-funded maintenance project is evaluated with respect to other activities and its impact to the overall mission of the Laboratory. Resources are applied so that infrastructure meets the needs of the research efforts and building occupants. These funding levels are projected over the five-year time period utilizing the input from Laboratory Executive Management. Deferred maintenance results, first hand knowledge of the facilities, and feedback (both formal and informal) from Laboratory personnel provide additional checks on the adequacy of maintenance funding levels.

## **5.11 Recapitalization**

Recapitalization projects are major renovations or reconstruction activities, including facility replacements, needed to keep existing facilities modern and relevant in an environment of changing standards and missions. It includes the restoration and modernization of existing facilities, but not the acquisition of new facilities. Recapitalization is funded primarily by GPP funds since the scale of the recapitalization projects fall below thresholds for line item funding. The last line item project of any type at the Laboratory was construction of the TASF building completed in 1995. That project provided a new facility for administrative services freeing up research space in existing laboratory buildings. Technically, even that project would not be considered recapitalization since it was not a facility replacement.

The recapitalization plan for the Laboratory is detailed in the Summary of Resource Needs, Section 6. Individual projects are shown out through FY2012. The level of capital reinvestment can be measured by the Capital Reinvestment Index defined as the capital funding divided by the replacement plant value (similar to the maintenance investment index). Historically, the capital reinvestment index for Ames Laboratory has been consistently around 1%.

Included in Section 6 is the FY2008 IFI Crosscut submission. It includes the submission showing a flat funding level based on the target FY2007 GPP level not escalated. Section 6.0 also includes a revised GPP budget request (Blocks 1-4) that was in the FY2008 IFI Crosscut submission. This represents the Alternate Investment Plan for the Laboratory. It enables the Laboratory to accelerate the completion the listed projects in a much more timely fashion and to allow projects for Systematic Space Modernization and Upgrading Access Control System to see major progress within the timeframe of the IFI Crosscut. Section 6.0 also includes a revised listing of Blocks 1-4 based on escalated GPP funding contained in the TYSP guidance for the Ames Laboratory.

As a single program laboratory, IGPP funding is not used at Ames Laboratory.

## 5.12 Line Item Projects

### Ames Plant Metabolomics Resource Facility

\$38,500,000	Total Estimated Building Cost (Including design, site/utility extension, construction and project management) (Design cost \$2,800,000)
\$30,000,000	Analytical and computing equipment
\$68,500,000	Total Estimated Cost

90,000 gsf	Note: This is a new initiative and is not replacing existing space. At this point no offsetting space has been identified in the site space bank.
------------	---

The Laboratory proposes to build a national facility for plant metabolomics. This facility will have state-of-the-art analytical instrumentation that will allow biologists to conduct genome-wide metabolite profiling. Furthermore, this facility will also become the source for the development of the next generation of instrumentation that will dramatically increase both the speed and sophistication of metabolomics experiments and will also be home to a team of experts in computational metabolomics. The proposed facility will include laboratories for visiting scientists and analytical methods development.

Combining the excellence in analytical chemistry, computational chemistry and virtual reality engineering in the Ames Laboratory with the rich tradition of plant science research at Iowa State University will make this facility the premier resource for plant metabolomics research. This facility will enable scientists across the nation to interact with leading scientists in chemistry, engineering and the biological sciences. Researchers will have access to state-of-the-art technologies for conducting high-throughput genome profiling experiments to functionally

analyze genomes. Although some national labs and universities have similar instruments, no single facility has the combination of cutting-edge instrumentation development and the collection of analytical instrumentation and computing facilities that will be present at the Ames Laboratory facility.

### **5.13 Performance Indicators and Measures**

Performance measures will be utilized to link performance of program goals and budgets to outputs and outcomes. Various performance measurements are formalized to track the performance in asset management. Efforts are made to utilize broad-based measures so a small number of results can provide a high level, integrated grasp of the stewardship of DOE assets at the Ames Laboratory. Measures and metrics are defined in O430.1B, Real Property Asset Management (RPAM) and in Appendix B of the operating contract. While there is some commonality in the measures, the metrics do not necessarily match. The measures and metrics associated with the Appendix B of the operating contract will be reported through the self-assessment report. The DOE corporate wide measures specific to RPAM, the Asset Condition Index and the Asset Utilization Index are reported directly through FIMS as well as being incorporated in the Laboratory Self-Assessment.

The Contract Performance Measures are reported on a fiscal year basis. The Contractor Performance Evaluation and Measurement Plan has undergone a revolutionary change between FY2005 and FY2006. Many of the measures have remained the same but the metrics have changed from a five step rating of Poor, Fair, Adequate, Good, or Excellent, to a 0—4.3 scale with letter grades from F to A+. Additional measures have been added. The FY2006 Measurement Plan is provided in Appendix 3. With the changes in the measurement plan there will be a transition period to establish a baseline with the new system for trending performance.

The Laboratory will work with the Ames Site Office to implement meaningful real property asset performance measures over the ten-year planning period that is commensurate with Ames Laboratory's duties and responsibilities. It is expected that the DOE Office of Science Lead Program Secretarial Officer (LPSO) will establish annual performance targets for the Office of Science real property assets and state their expected performance outputs and outcomes in their annual direction and guidance. The Ames Laboratory will work with the Ames Site Office to develop site-specific measures to assess the level to which the LPSO-established outputs and outcomes have been attained. Typically these measures will be incorporated into the operating contract.

### **5.14 FIMS**

The Facilities Information Management System (FIMS) is the “corporate” database for real property data within DOE. The Office of Industrial Outreach & Technology Administration has the responsibility of populating, maintaining and auditing the FIMS database. The data is provided by the appropriate source departments; e.g., Facilities Services Group and Accounting. The database itself is defined and controlled at a corporate level. The Laboratory has a FIMS



Quality Assurance Plan that meets the requirements of the FIMS Administrative Guide to ensure that FIMS is efficiently and effectively managed. New fields added to the FIMS database are populated promptly for all assets. In response to Executive Order 13327, “Federal Real Property Asset Management” and the guidance from the Federal Real Property Council, many new fields were added to FIMS. All of these fields have been populated with data for each of the assets and they will be updated annually.

### **5.15 Process for Development of the Ten Year Site Plan**

The process for development of the Ten Year Site Plan is a reflection and expression of the overall planning process for the infrastructure needs of the Laboratory as described in the Ames Laboratory Real Property Asset Management Plan. The planning process has the following broad objectives.

- Assess the current real property assets with respect to program mission needs and projections.
- Identify the specific real property asset projects and activities required to meet the program mission requirements.

Projects are defined based on Condition Assessment Survey (CAS) results, FSG personnel’s knowledge of the facility, input from program directors, input from the Laboratory Executive Management and input from other occupants. The Institutional Plan lays out the long-term goals and strategic plans of the Laboratory. Laboratory personnel have regular interaction with facility and planning staff of the University to coordinate the plans and changes on the broader University campus that may affect the Laboratory. Input from the broader Laboratory community occurs through both formal and informal processes. Informal input is very effective given the size and nature of the Laboratory. Facility management and needs assessment are not compartmentalized in separate facilities or organizational units. Personnel within the scientific programs, support departments and Executive Council interact extensively with the Facilities Services Group. Facility needs are routinely communicated among these groups and individuals within the groups. A formal process also exists to ensure the opportunity for input and communication. A call for input for the Environment, Safety, Health and Infrastructure (ESH&I) Management Plan is sent annually to Laboratory Directors and Program Directors. Program Directors meet with the FSG Manager to review and discuss infrastructure needs and priorities. That input is incorporated into existing plans and reviewed with the Executive Council for inclusion in the Ten Year Site Plan and the Field Budget Request process. Activity Data Sheets are developed for each capital improvement project. A scoring committee uses the Risk-Based Priority Model to score projects based on six categories—Public Safety and Health, Site Personnel Safety and Health, Compliance, Mission Impact, Cost Effective Risk Management and Environmental Protection. The scores and priorities are reviewed and adjusted by Laboratory Executive Management in accordance with budgetary constraints, resource limitations, external stakeholder issues, strategic goals and other considerations. The results of this planning are then captured in the Ten Year Site Plan. Individual sections were drafted by the subject matter experts and reviewed by the appropriate stakeholders.

The Laboratory Executive Management has approved the Ten Year Site Plan as a roadmap for meeting the infrastructure needs of the Laboratory enabling it to best carry out its research mission in helping to achieve the Department of Energy's Missions and Goals.

### **5.16 Energy Management**

Ames Laboratory takes a proactive approach to Energy Management by constantly looking for cost effective ways to save energy while reviewing the energy that is used to ensure that resources are used in an efficient manner to support the mission of the Laboratory. Ames Laboratory meets all energy reporting requirements set by DOE Order 430.2a and the Energy Policy Act of 2005 and strives to achieve the conservation goals set by those documents.

Ames Laboratory does not have a dedicated Energy Management Group instead; all energy management functions are the responsibility of the Facilities Services Group, which is charged with maintaining the entire facility. Energy efficiency and conservation considerations are incorporated into facility and infrastructure maintenance and improvements seamlessly by having the Energy Management and Facility Management responsibilities handled within one department. The Facilities Services Group is responsible for the development, implementation and coordination of the Energy Management Plan, and for leading the Laboratory's effort to meet DOE's energy reduction goals. The energy management activities that impact the overall Environmental Management System are coordinated with counterparts in the Environment, Safety, Health and Assurance Department.

Annually, the Ames Laboratory sets performance agreements in Energy Management with the Ames Site Office and sets internal conservation goals via a site In-House Energy Management Plan. The In-House Energy Management Plan and the performance agreements together form the plan to meet the conservation goals established by DOE Order 430.2a and the Energy Policy Act of 2005. In addition to setting specific goals for the current and next fiscal years the Ames Laboratory In-House Energy Management Plan sets long term goals through 2010. The next revision of the Ames Laboratory In-House Energy Management Plan will include conservation goals out through 2015.

### **5.17 Replacement Plant Value (RPV) Estimates**

Replacement Plant Values are contractor generated using a current plant value method. The values are updated each year in September. They are adjusted for capital improvements that change the current plant value basis such as building additions. They are also escalated using escalation factors based on Whitestone Research Construction Index Data provided by the DOE Chicago Office. These factors are based on the most recent year of actual construction cost escalation. The increase in RPV from FY2004 to FY2005 was 3.22% due solely to the annual escalation of construction cost. Replacement Plant Values are escalated into the future using the guidance from the Office of Science. The most recent value (FY2005) is used for the budget year FY2008 and is escalated over the plan period at 2.3%. The total Replacement Plant Value is adjusted over the plan period by any dispositions or new construction. Table 5 shows the values.

Table 5. Replacement Plant Values

Year	RPV (\$1,000's)	Additions/ Disposition (\$1,000's)	
2005	52,987.9		
2006	52,987.9		
2007	52,987.9		
2008	54,693.4		
2009	55,951.3		
2010	57,238.2		
2011	58,554.7		
2012	98,401.5	38,500.0	Plant Metabolomics Resource Facility
2013	100,664.7		
2014	102,980.0		
2015	105,348.5		
2016	107,771.5		
2017	110,250.3		

## 6.0 Summary of Resource Needs

Office of Science IFI Crosscut — Target Funding Plan

Pages 36-39

Office of Science IFI Crosscut — Alternate Funding Plan

Pages 40-43

FY2008 IFI Crosscut Budget Submission

Pages 44-49

**FY 2008-2012 CPR  
Facilities and Infrastructure Budget Crosscut**

[illegible]



**FY 2008-2012 CPR  
Facilities and Infrastructure Budget Crosscut**

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		Gross Sq. Ft. Approp.	FY2006 Budget (\$000)	FY2007 Budget (\$000)	FY2008 Budget (\$000)	FY2009 Budget (\$000)	FY2010 Budget (\$000)	FY2011 Budget (\$000)	FY2012 Budget (\$000)
<b>Office of Science TYSP Target Funding</b>									
<b>SITE NAME: Ames Laboratory</b>									
<b>PROGRAM: Office of Science (BES)</b>									
<b>5.0 Maintenance &amp; Repair</b>									
5.1 Direct Funded (by HQ or Site Program)									
None									
Subtotal 5.1 Total Direct Funded Maintenance & Repair			0	0	0	0	0	0	0
5.2 Indirect (from Overhead or Space Charges)									
General Maintenance			764	843	794	925	957	992	1,026
CMMS System Implementation/Main			162	120	23	23	24	24	24
Replace Roof, Campus Warehouse					105				
Rehab Lab Space					75	83	85	88	90
Misc. DIM Reduction			35	37	38	40	42	43	45
Subtotal 5.2 Indirect Maintenance & Repair			961	1,000	1,035	1,071	1,108	1,147	1,185
Subtotal Total Maintenance & Repair (5.1+5.2)			961	1,000	1,035	1,071	1,108	1,147	1,185
5.3 Direct Funded Deferred Maintenance									
None									
Subtotal 5.3 Direct Funded Deferred Maintenance			0	0	0	0	0	0	0
5.4 Indirect Funded Deferred Maintenance **									
Not Applicable									
Subtotal 5.4 Total Indirect Deferred Maintenance			0	0	0	0	0	0	0
Total Deferred Maintenance (5.3+5.4)			0	0	0	0	0	0	0
Total Maintenance (5.1+5.2+5.3+5.4)			961	1,000	1,035	1,071	1,108	1,147	1,185
<b>6.0 Indirect O&amp;E</b>									
6.1 Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.									
None									
6.1 Total Indirect Excess elimination		0	0	0	0	0	0	0	0
6.2 Other Indirect Funded									
None									
6.2 Total Other Indirect O&E		0	0	0	0	0	0	0	0
6.0 Total Indirect O&E		0	0	0	0	0	0	0	0

\* Implementation costs of new CMMS system included in FY2006 and FY2007. FY2008 through FY2012 reflects CMMS system maintenance costs only.

\*\* Section 5.4 is specifically for SC Labs that have been assigned DIM reduction goals. Ames Laboratory does not fit this criteria.

**FY 2008-2012 CPR  
Facilities and Infrastructure Budget Crosscut**

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		<b>Gross Sq. Ft.</b>	<b>FY2006 Approp. (\$000)</b>	<b>FY2007 Budget (\$000)</b>	<b>FY2008 Budget (\$000)</b>	<b>FY2009 Budget (\$000)</b>	<b>FY2010 Budget (\$000)</b>	<b>FY2011 Budget (\$000)</b>	<b>FY2012 Budget (\$000)</b>
<b>Office of Science TYSP Target Funding</b>									
<b>SITE NAME: Ames Laboratory</b>									
<b>PROGRAM: Office of Science (BES)</b>									
<b>5.0 Maintenance &amp; Repair</b>									
5.1 Direct Funded (by HQ or Site Program)									
None			0	0	0	0	0	0	0
Subtotal 5.1 Total Direct Funded Maintenance & Repair									
5.2 Indirect (from Overhead or Space Charges)									
General Maintenance			764	843	794	925	957	992	1,026
CMMS System Implementation/Main			162	120	23	23	24	24	24
Replace Roof, Campus Warehouse					105				
Rehab Lab Space					75	83	85	88	90
Misc. DM Reduction			35	37	38	40	42	43	45
Subtotal 5.2 Indirect Maintenance & Repair			961	1,000	1,035	1,071	1,108	1,147	1,185
Subtotal Total Maintenance & Repair (5.1+5.2)			961	1,000	1,035	1,071	1,108	1,147	1,185
5.3 Direct Funded Deferred Maintenance									
None			0	0	0	0	0	0	0
Subtotal 5.3 Direct Funded Deferred Maintenance									
5.4 Indirect Funded Deferred Maintenance **									
Not Applicable			0	0	0	0	0	0	0
Subtotal 5.4 Total Indirect Deferred Maintenance			0	0	0	0	0	0	0
Total Deferred Maintenance (5.3+5.4)			0	0	0	0	0	0	0
Total Maintenance (5.1+5.2+5.3+5.4)			961	1,000	1,035	1,071	1,108	1,147	1,185
<b>6.0 Indirect O&amp;E</b>									
6.1 Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.									
None			0	0	0	0	0	0	0
6.2 Other Indirect Funded									
None			0	0	0	0	0	0	0
6.2 Total Other Indirect O&E			0	0	0	0	0	0	0
6.0 Total Indirect O&E			0	0	0	0	0	0	0

\* Implementation costs of new CMMS system included in FY2006 and FY2007. FY2008 through FY2012 reflects CMMS system maintenance costs only.

\*\* Section 5.4 is specifically for SC Labs that have been assigned DM reduction goals. Ames Laboratory does not fit this criteria.





FY 2008-2012 CPR  
Facilities and Infrastructure Budget Crosscut

Integrated Facilities and Infrastructure Budget Data Sheet (IFI) Alternate Funding Plan													
	Deferred Maintenance Reduction (\$000)	Gross Building Area Added	Gross Building Area Removed	FY2006 Approp. (\$000)	FY2007 Budget (\$000)	FY2008 Budget (\$000)	FY2009 Budget (\$000)	FY2010 Budget (\$000)	FY2011 Budget (\$000)	FY2012 Budget (\$000)			
4.0 Operating/Expense for Excess Elimination and Other													
4.1 Excess Elimination (demolition, sale, lease, transfer).													
Closeout and Demolition of Waste Handling Facility and Hydrogen Test Cell Facility, J63577			9,900	45									
4.1 Subtotal			9,900	45	0	0	0	0	0	0			
4.2 All Other (List direct O&E maintenance under 5.1)													
None													
4.2 Subtotal	0	0	0	0	0	0	0	0	0	0			
Subtotal 4.0 Operating/Expense Projects (4.1+4.2)	0	0	9,900	45	0	0	0	0	0	0			
TOTAL Capital & Operating Investment:	280	90,000	9,900	676	830	850	69,430	1,070	815	980			
TOTAL Overhead Investments (IGPP)	0	0	0	0	0	0	0	0	0	0			

**FY 2008-2012 CPR  
Facilities and Infrastructure Budget Crosscut**

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		Gross Sq. Ft.	FY2006 Approp. (\$000)	FY2007 Budget (\$000)	FY2008 Budget (\$000)	FY2009 Budget (\$000)	FY2010 Budget (\$000)	FY2011 Budget (\$000)	FY2012 Budget (\$000)
<b>Alternate Funding Plan</b>									
<b>SITE NAME: Ames Laboratory</b>									
<b>PROGRAM: Office of Science (BES)</b>									
<b>5.0 Maintenance &amp; Repair</b>									
5.1 Direct Funded (by HQ or Site Program)									
None			0	0	0	0	0	0	0
Subtotal 5.1 Total Direct Funded Maintenance & Repair									
5.2 Indirect (from Overhead or Space Charges)									
General Maintenance			764	843	794	925	957	992	1,379
CMMS System Implementation/Main			162	120	23	23	24	24	24
Replace Roof, Campus Warehouse					105				
Rehab Lab Space					75	83	85	88	90
Misc. DM Reduction			35	37	38	40	42	43	45
Subtotal 5.2 Indirect Maintenance & Repair			961	1,000	1,035	1,071	1,108	1,147	1,538
Subtotal Total Maintenance & Repair (5.1+5.2)			961	1,000	1,035	1,071	1,108	1,147	1,538
5.3 Direct Funded Deferred Maintenance									
None									
Subtotal 5.3 Direct Funded Deferred Maintenance			0	0	0	0	0	0	0
5.4 Indirect Funded Deferred Maintenance ***									
Not Applicable									
Subtotal 5.4 Total Indirect Deferred Maintenance			0	0	0	0	0	0	0
Total Deferred Maintenance (5.3+5.4)			0	0	0	0	0	0	0
Total Maintenance (5.1+5.2+5.3+5.4)			961	1,000	1,035	1,071	1,108	1,147	1,538
<b>6.0 Indirect O&amp;E</b>									
6.1 Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.									
None									
6.1 Total Indirect Excess elimination			0	0	0	0	0	0	0
6.2 Other Indirect Funded									
None									
6.2 Total Other Indirect O&E			0	0	0	0	0	0	0
6.0 Total Indirect O&E			0	0	0	0	0	0	0

\* Increase in FY2012 due to addition of Metabolomics Resource Facility.

\*\* Implementation costs of new CMMS system included in FY2006 and FY2007. FY2008 through FY2012 reflects CMMS system maintenance costs only.

\*\*\* Section 5.4 is specifically for SC Labs that have been assigned DM reduction goals. Ames Laboratory does not fit this criteria.

**FY 2008-2012 CPR  
Facilities and Infrastructure Budget Crosscut**

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		<b>Gross Building Area</b>	<b>FY 06 Sq. Ft.</b>	<b>FY 07 Sq. Ft.</b>	<b>FY 08 Sq. Ft.</b>	<b>FY 09 Sq. Ft.</b>	<b>FY 10 Sq. Ft.</b>	<b>FY 11 Sq. Ft.</b>	<b>FY 12 Sq. Ft.</b>
<b>Alternate Funding Plan</b>									
<b>SITE NAME: Ames Laboratory</b>									
<b>PROGRAM: Office Science (BES)</b>									
<b>7.0 Summary of Area Added &amp; Eliminated</b>									
<b>7.1 Total Area to be Eliminated Each Year</b>									
<b>Line Item</b>									
None									
Subtotal Line Items		0	0	0	0	0	0	0	0
GPP									
None									
Subtotal GPP		0	0	0	0	0	0	0	0
IGPP									
None									
Subtotal IGPP		0	0	0	0	0	0	0	0
Operations/Expense									
Closeout and Demolition of Waste Handling Facility and Hydrogen Test Cell Facility, J63577 *		9,900	9,900						
Subtotal Operations/Expense		9,900	9,900						
Indirect Operations/Expense									
None									
Subtotal Indirect Operations/Expense		0	0	0	0	0	0	0	0
Transfer by sale or lease, or transfer to an outside federal agency									
None									
Subtotal Transfer		0	0	0	0	0	0	0	0
Subtotal 7.1 Excess Facility Area Eliminated		9,900	9,900	0	0	0	0	0	0
<b>7.2 Total Area to be Added by GPP, IGPP, and LI Construction</b>		<b>Gross Building Area</b>	<b>FY 06 Sq. Ft.</b>	<b>FY 07 Sq. Ft.</b>	<b>FY 08 Sq. Ft.</b>	<b>FY 09 Sq. Ft.</b>	<b>FY 10 Sq. Ft.</b>	<b>FY 11 Sq. Ft.</b>	<b>FY 12 Sq. Ft.</b>
<b>Line Item</b>									
Ames Plant Metabolomics Resource Facility, L0001		90,000						90,000	
Subtotal Line Items		90,000	0	0	0	0	0	90,000	0
GPP									
None									
Subtotal GPP		0	0	0	0	0	0	0	0
IGPP									
None									
Subtotal IGPP		0	0	0	0	0	0	0	0
Subtotal 7.2 Area Added		90,000	0	0	0	0	0	90,000	0

\* Facilities vacated are not in FIMS inventory but are maintained by Ames Laboratory as part of Beneficial Occupancy arrangement with Iowa State University.

**FY2008 Facilities and Infrastructure**  
**Budget Crosscut Data Entry Sheet**  
(Dollars in Thousands)

TAB A

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		<b>Project Number</b>	<b>Gross Building Area</b>	<b>FY2006 Approp. (\$000)</b>	<b>FY2007 Target Budget (\$000)</b>	<b>FY2008 Target Budget (\$000)</b>	<b>FY2009 Target Budget (\$000)</b>	<b>FY2010 Target Budget (\$000)</b>	<b>FY2011 Target Budget (\$000)</b>	<b>FY2012 Target Budget (\$000)</b>
<b>SITE NAME: Ames Laboratory</b>										
<b>PROGRAM: Office of Science (BES)</b>										
<b>1.0 Capital Line Item (include project number &amp; identify Funding Program)</b>										
<b>1.1 New Construction (facilities and additions)</b>										
Ames Plant Metabolomics Resource Facility		L0001	90,000				68,500			
<b>1.2 All Other Projects (recap)</b>										
<b>Subtotal Line Item Projects</b>			90,000	0	0	0	68,500	0	0	0
<b>2.0 General Plant Project (GPP) (include project number &amp; identify Funding Program)</b>										
<b>2.1 New Construction (facilities and additions)</b>										
None										
<b>2.2 All Other Projects (recap)</b>										
KC-03 GPP Convert Graphics Area to Training Center, TASF		P0022		310						
KC-03 GPP Upgrade HVAC System, Spedding Hall		P0005		216	580	580	555			
KC-03 GPP Upgrade HVAC, Front Section, Metals Dev. Bldg		P0004					25	385		
KC-03 GPP Record Storage Facility		P0007						180		
KC-03 GPP Upgrade Harley Wilhelm Hall Exit Doors		P0008						15	25	
KC-03 GPP Handicapped Access, All Buildings		P0009							230	
KC-03 GPP Systematic Space Modernization		P0014								340
KC-03 GPP Upgrade Elevator, Metals Development Bldg		P0012							235	
KC-03 GPP Install Fire Sprinklers, Maintenance Shops Building		P0015								110
KC-03 GPP Upgrade Access Control System		P0016								
KC-03 GPP Misc. Other Projects									90	130
<b>Subtotal KC-03 GPP:</b>			0	526	580	580	580	580	580	580
KG GPP Replace Electric Panels, HWH		P0018		105						
<b>Subtotal KG GPP:</b>			0	105	0	0	0	0	0	0



**FY2008 Facilities and Infrastructure**  
**Budget Crossover Data Entry Sheet**  
(Dollars in Thousands)

TAB A

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		<b>Project Number</b>	<b>Gross Building Area</b>	<b>FY 2006 Approp. (\$000)</b>	<b>FY 2007 Revised* Budget (\$000)</b>	<b>FY 2008 Revised* Budget (\$000)</b>	<b>FY 2009 Revised* Budget (\$000)</b>	<b>FY 2010 Revised* Budget (\$000)</b>	<b>FY 2011 Revised* Budget (\$000)</b>	<b>FY 2012 Revised* Budget (\$000)</b>
<b>SITE NAME: Ames Laboratory</b>										
<b>PROGRAM: Office of Science (BES)</b>										
<b>1.0 Capital Line Item (Include project number &amp; identify Funding Program)</b>										
<b>1.1 New Construction (facilities and additions)</b>										
Ames Plant Metabolomics Resource Facility		L0001	90,000				68,500			
<b>1.2 All Other Projects (recap)</b>										
None										
<b>Subtotal Line Item Projects</b>			90,000	0	0	0	68,500	0	0	0
<b>2.0 General Plant Project (GPP) (Include project number &amp; identify Funding Program)</b>										
<b>2.1 New Construction (facilities and additions)</b>										
None										
<b>2.2 All Other Projects (recap)</b>										
KC-03 GPP Convert Graphics Area to Training Center, TASF		P0022		310						
KC-03 GPP Upgrade HVAC System, Spedding Hall		P0005		216	830	850				
KC-03 GPP Upgrade HVAC, Front Section, Metals Development Bldg		P0004					400			
KC-03 GPP Record Storage Facility		P0007					175			
KC-03 GPP Upgrade Harley Wilhelm Hall Exit Doors		P0008					40			
KC-03 GPP Handicapped Access, All Buildings		P0009					215			
KC-03 GPP Systematic Space Modernization		P0014						320	330	340
KC-03 GPP Upgrade Elevator, Metals Development Bldg		P0012						230		
KC-03 GPP Install Fire Sprinklers, Maintenance Shops Building		P0015						105		
KC-03 GPP Upgrade Access Control System		P0016						415	365	560
KC-03 GPP Misc. Other Projects							100	0	120	80
<b>Subtotal KC-03 GPP:</b>			0	526	830	850	930	1,070	815	980
<b>KG GPP Replace Electric Panels, HWH</b>		P0018		105						
<b>Subtotal KG GPP:</b>			0	105	0	0	0	0	0	0

\* Includes above Target needs for General Plant Projects (KC-03 GPP)

**FY2008 Facilities and Infrastructure**  
**Budget Crosscut Data Entry Sheet**  
(Dollars in Thousands)

3.0 Institutional General Plant Project (IGPP)												
None												
Subtotal IGPP Projects												
4.0 Operating/Expense for Excess Elimination and Other												
4.1 Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.												
Closeout and Demolition of Waste Handling Facility and Hydrogen Test Cell Facility												
4.1 Subtotal												
4.2 All Other (List direct O&E maintenance under 5.1)												
None												
4.2 Subtotal												
Subtotal Operating/Expense Projects												
TOTAL Capital & Operating Investments:												
TOTAL Overhead Investments (IGPP)												

**FY2008 Facilities and Infrastructure**  
**Budget Crosscut Data Entry Sheet**  
(Dollars in Thousands)

TAB A

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFI)</b>		<b>Project Number</b>	<b>Gross Building Area</b>	<b>FY 2006 Approp. (\$000)</b>	<b>FY 2007 Budget (\$000)</b>	<b>FY 2008 Budget (\$000)</b>	<b>FY 2009 Budget (\$000)</b>	<b>FY 2010 Budget (\$000)</b>	<b>FY 2011 Budget (\$000)</b>	<b>FY 2012 Budget (\$000)</b>
<b>SITE NAME: Ames Laboratory</b>										
<b>PROGRAM: Office of Science (BES)</b>										
<b>5.0 Maintenance &amp; Repair</b>										
<b>5.1 Direct Funded (by HQ or Site Program)</b>										
List direct O/E maintenance projects										
<b>5.1 Deferred Maintenance Reduction</b>										
<b>Sub-Total Direct Maintenance &amp; Repair</b>				0	0	0	0	0	0	0
<b>5.2 Indirect (from Overhead or Space Charges)</b>										
General Maintenance				764	843	794	925	957	992	1,379
CMMS System Implementation/Main				162	120	23	23	24	24	24
Replace Roof, Campus Warehouse						105				
Rehab Lab Space						75	83	85	88	90
Deferred Maintenance Reduction										
Misc. DM Reduction				35	37	38	40	42	43	45
<b>Total Indirect Maintenance &amp; Repair</b>				961	1,000	1,035	1,071	1,108	1,147	1,538
<b>Total Maintenance &amp; Repair</b>				961	1,000	1,035	1,071	1,108	1,147	1,538
<b>6.0 Indirect O&amp;E Excess Elimination (demolition, sale, lease, transfer). Show area eliminated in Gross Area column.</b>										
<b>Total Indirect Excess Elimination</b>			0	0	0	0	0	0	0	0

\* Increase in FY2012 due to Metabolomics Resource Facility.

\*\* Implementation costs of new CMMS system included in FY2006 and FY2007. FY2008 through FY2012 reflects CMMS system maintenance costs only.



TAB A

**FY2008 Facilities and Infrastructure**  
**Budget Crosscut Data Entry Sheet**  
(Dollars in Thousands)

<b>Integrated Facilities and Infrastructure Budget Data Sheet (IFD)</b>		<b>Project Number</b>	<b>FY 2006 Approp. (\$000)</b>	<b>FY 2007 Budget (\$000)</b>	<b>FY 2008 Budget (\$000)</b>	<b>FY 2009 Budget (\$000)</b>	<b>FY 2010 Budget (\$000)</b>	<b>FY 2011 Budget (\$000)</b>	<b>FY 2012 Budget (\$000)</b>
<b>SITE NAME: Ames Laboratory</b>									
<b>PROGRAM: Office Science (BES)</b>									
<b>7.0 Area of Excess Eliminated</b>									
List of projects, by type of funding, with project number, and excess AREA eliminated by fiscal year accomplished.									
Line Item									
GPP									
IGPP									
Operations/Expense									
Closeout and Demolition of Waste Handling Facility and Hydrogen Test Cell Facility	J63577*	9,900							
Indirect Operations/Expense									
Transfer by sale or lease, or transfer to an outside federal agency									
Subtotal of Excess Facility Area Eliminated		9,900	0	0	0	0	0	0	0
Total Area to be Eliminated Each Year (Demolition, Sale or Transfer Completion Year)		9,900	0	0	0	0	0	0	0
Total Area to be Added by GPP, IGPP, and LJ Construction (List Area Under Occupancy Year)		0	0	0	0	0	0	0	90,000

\* Facility vacated is not in FIMS inventory but is maintained by Ames Laboratory as part of Beneficial Occupancy arrangement with Iowa State University.

**Appendix 1 Summary Overview of SC Facilities at Ames Laboratory**

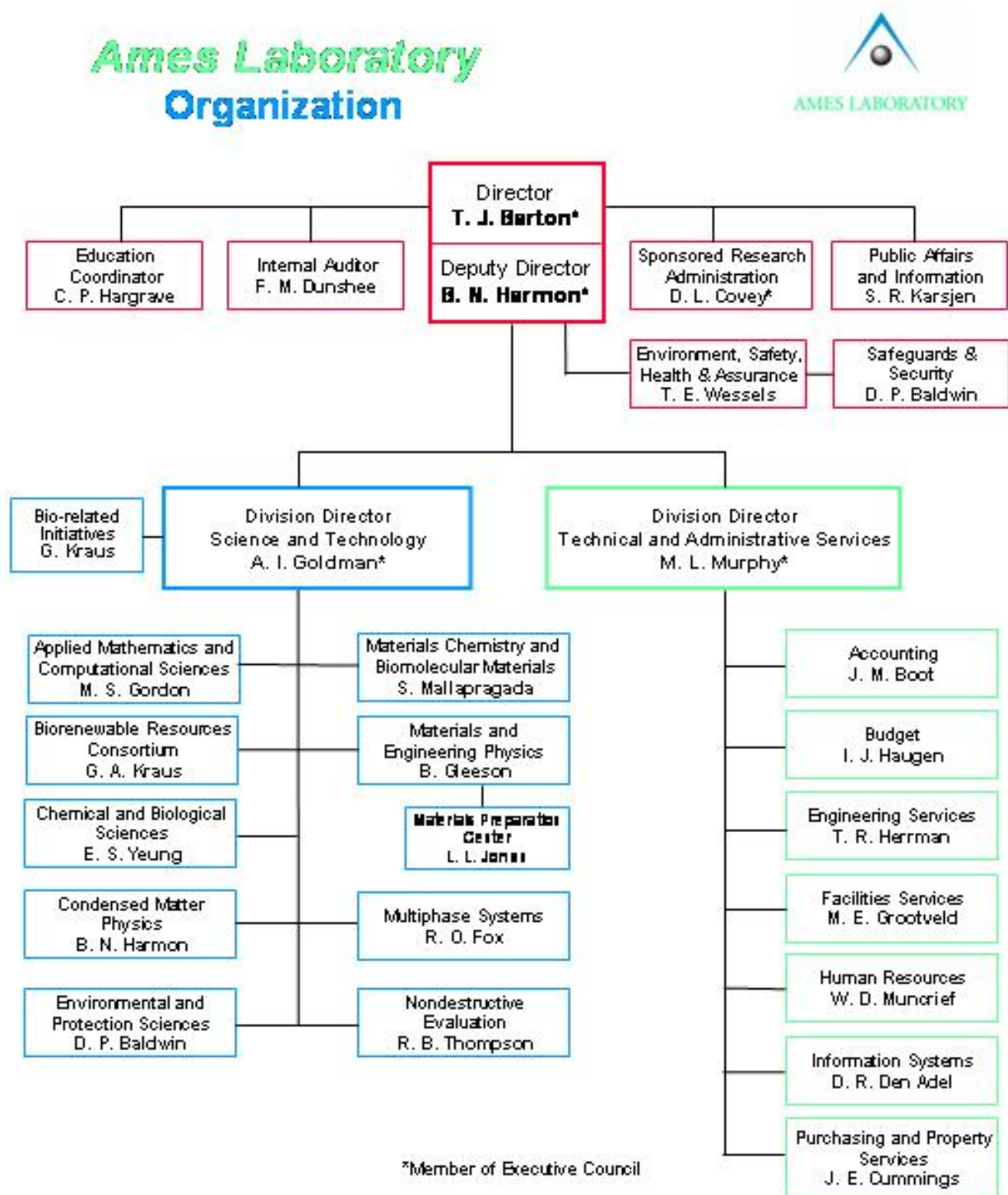
Total Building Space (gross ft <sup>2</sup> )	327,664
Buildings	12
Largest Occupied Building (gross ft <sup>2</sup> ): Spedding Hall	107,630
Trailers, number of:	0
Real Property	0
Personal Property	0
Wooden Buildings	0
Excess Facilities:	N/A
Uncontaminated	N/A
Contaminated	N/A
Replacement Plant Value (RPV): FY05 FIMS Total	\$54,693,400
Programmatic (OSF 3000 category)	\$0
Non-Programmatic (used for calculating Indices)	\$54,693,400
Landlord Program	Office of Science Basic Energy Science
Age of Buildings: Average	37 years
% of space older than 40 years	74%
% of space 30 years or younger	15%
Maintenance Investment Index (MII)	
FY 03	1.49%
FY 04	1.57%
FY 05	1.93%
FY 06 (planned)	1.81%
FY 07 (planned)	1.89%
FY 08 (planned)	1.89%
FY 09 (planned)	1.91%
FY 10 (planned)	1.94%
FY 11 (planned)	1.96%
FY 12 (planned)	1.56%*

\* The decrease in MII is caused by adding the proposed line item construction project, the Ames Plant Metabolomics Resource Facility to the inventory. It will significantly increase the RPV but will require very limited investment for corrective maintenance.

**Appendix 1 Summary Overview of SC Facilities at Ames Laboratory (cont.)**

Deferred Maintenance (DM) Trend	
DM 2003	\$1,567,800
DM 2004	\$1,382,890
DM 2005	\$1,453,710
DM 2006 (estimate)	\$1,406,300
DM 2007 (estimate)	\$1,396,500
DM 2008 (estimate)	\$1,406,000
DM 2009 (estimate)	\$1,413,800
DM 2010 (estimate)	\$1,419,900
DM 2011 (estimate)	\$1,320,500
DM 2012 (estimate)	\$1,304,600
Total Summary Condition (DM + RIC) *:	\$8,134,900
Deferred Maintenance (DM)	\$1,382,890
Rehab and Improvement Cost (RIC)	\$6,752,000
*Doesn't include personal property trailers	
Total Summary Condition Index (TSCI): (% of Total RPV) *	14.87%
Facility Condition Index (FCI) (based on DM)	2.66%
Rehab & Improvement Cost Index (based on RIC)	12.21%
ACI (Asset Condition Index from RPAM Order) (1-FCI)	0.973 (good)
AUI (Asset Utilization Index from RPAM Order)	0.994 (excellent)
Leased Assets:	
Square Footage: Total	N/A
Office	N/A
Other	N/A
Annual Lease Costs:	N/A

## Appendix 2 Ames Laboratory Organizational Chart



### **Appendix 3 FY2006 Contractor Performance Evaluation and Measurement Plan Taken directly from the Ames Laboratory Contract Modification No. 387**

#### **7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs**

The Contractor provides appropriate planning for, construction and management of Laboratory facilities and infrastructures required to efficiently and effectively carry out current and future S&T programs.

The weight of this Goal is 20%.

The Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs Goal shall measure the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today's and tomorrow's complex challenges.

Each Objective within this Goal is to be assigned the appropriate numerical score by DOE as described within Section I of this document. Each Objective has one or more measures, the outcomes of which collectively assist the evaluating office in determining the Contractor's overall performance in meeting that Objective. Each of the measures identifies significant tasks, activities, requirements, accomplishments, and/or milestones for which the outcomes/results of are important to the success of the corresponding Objective. Although other performance information available to the evaluating office from other sources may be used, the outcomes of key measures identified for each Objective shall be the primary means of determining the Contractor's success in meeting an Objective. The overall Goal score is computed by multiplying numerical scores earned by the weight of each Objective, and summing them (see Table 7.1 at the end of this section). The overall score earned is then compared to Table 7.2 to determine the overall Goal letter grade.

#### **7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs**

In measuring the performance of this Objective the DOE evaluator shall consider the following:

- The management of real property assets to maintain effective operational safety, worker health, environmental protection and compliance, property preservation, and cost effectiveness while meeting program missions, through effective facility utilization, maintenance and budget execution;
- The day-to-day management and utilization of space in the active portfolio;

- The maintenance and renewal of building systems, structures and components associated with the Laboratory's facility and land assets; and
- The management of energy use and conservation practices.

The overall performance (outcomes/results) of the following set of measures (tasks, activities, requirements, accomplishments, and/or milestones) shall be utilized by evaluators as the primary measure of the Contractor's success in meeting this Objective and for determining the numerical score awarded. The evaluation of this Objective may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified below but that provide evidence to the effectiveness/performance of the Contractor in meeting this Objective. The weight of this Objective is 80%.

7.1a The Maintenance Investment Index (MII) for the fiscal year associated with the performance period.

The MII, expressed as a percentage, is defined as the Actual OE funded Maintenance and Repair (M&R) Expenditures (at the end of the fiscal year associated with the performance period) divided by the Replacement Plant Value (RPV).

$$\text{MII} = \frac{\text{Actual Maintenance Expenditures}}{\text{RPV (\$)}}$$

7.1a (1) MII Target for CY 2006; B+ level = 1.8:

7.1b The Facility Condition Index (FCI)

The FCI, expressed as a percentage, is defined as the Total Needed OE funded Maintenance and Repair (M&R) Deficiencies (at the end of the fiscal year associated with the performance period) divided by the Replacement Plant Value (RPV).

$$\text{FCI} = \frac{\text{Total Needed M \& R Deficiencies (\$)}}{\text{RPV (\$)}}$$

7.1b (1) FCI Target for CY 2006; B+ level = 1.9 – 2.5

7.1c Successful implementation of facility improvements that achieve cost savings in the form of material or contract dollars that will not need to be spent for facility maintenance.

7.1d Effective execution of the goals within the Energy Performance Management Agreement

7.1d (1) Target expectation B+ - 75% of the Energy requirements scheduled to be accomplished during the Fiscal Year in accordance with the Current Energy Management Plan (CEMP) are completed.

<u>Target</u>	<u>CEMP % Requirements Completed</u>
A	78 %
B+	75 %
C+	72 %
D	69 %

7.1d (2) Target expectation B+ - Energy use per gross square foot is less than the previous year as negotiated between the DOE and the lab.

<u>Targets</u>	<u>Energy Use Rating Scale</u>
A	> 0.05
B+	0.034 - 0.033
C+	0.027 - 0.026
D	0.020 – 0.010

7.1d (3) Demonstrate commitment to purchases of energy efficient products including products with low standby power devices.

<u>Target</u>	<u>Energy Efficient Products Rating Scale</u>
A	> 10
B+	7
C+	4
D	1

## 7.2 Provide Planning for and Acquire the Facilities and Infrastructure Required to support Future Laboratory Programs

In measuring the performance of this Objective the DOE evaluator shall consider the following:

- Integration and alignment of the Ten Year Site Plan to the Laboratory's comprehensive strategic plan;
- The facility planning, forecasting, and acquisition for effective translation of business needs into comprehensive and integrated facility site plans;
- The effectiveness in producing quality site and facility planning documents as required;
- The involvement of relevant stakeholders in all appropriate aspects of facility planning and preparation of required documentation;
- Efficiency in meeting Cost and Schedule Performance Index for construction projects (when appropriate).
- Overall responsiveness to customer mission needs

The overall performance (outcomes/results) of the following set of measures (tasks, activities, requirements, accomplishments, and/or milestones) shall be utilized by DOE evaluators as the primary measure of the Contractor's success in meeting this Objective and

for determining the numerical score awarded. The evaluation of this Objective may also consider other tasks, activities, requirements, accomplishments, and/or milestones not otherwise identified below but that provide evidence to the effectiveness/performance of the Contractor in meeting this Objective. The weight of this Objective is 20%.

7.2a Facility planning, forecasting, and acquisition activities translate needs and facility condition information into useful strategic plans

7.2b The Ten Year Site Plan and the IFI Budget are submitted according to the required schedule and demonstrate effective and realistic facility planning

7.2c The management information systems development projects are executed in accordance with generally acceptable project management practices.

ELEMENT	Letter Grade	Numerical Score	Objective Weight	Total Points	Total Points
7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs					
7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs			80%		
7.2 Provide Planning for and Acquire the Facilities and Infrastructure Required to support Future Laboratory Programs			20%		
<b>Performance Goal 7.0 Total</b>					

Table 7.1 – 7.0 Goal Performance Rating Development

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

Goal Final Letter Grade

Table  
7.2  
–  
7.0



## Appendix 4 Table of Contents Crosswalk

### Ten Year Site Plan Contents

### Office of Science Guidance

<u>Description</u>	<u>Source</u>	<u>Description</u>
1.0 Executive Summary	1.0	A. Executive Summary
2.0 Site Summary	2.0	B. Overview of Site F&I
3.0 Mission	3.0	C. Current & Future Missions for the Site
4.0 Land Use Plans	5.0	D. Facilities and Infrastructure
5.0 Facilities and Infrastructure (F&I)	5.01	1. Vision, Goals, & Strategy (VGS)
5.01 Strategic F&I Goals/Issues	5.01	2. Process for Identifying F&I Needs...
5.02 Condition Assessment Process	4.0	3. Land Use Plans
5.03 Condition Overview	5.08	4. Excess Real Property
5.04 Facilities Mgmt, Space Mgmt/Util	5.08	5. Long Term Stewardship
5.05 Facilities Supporting Mission Act	5.17	6. Replacement Plant Value (RPV) Est.
5.06 Site Utility Systems	5.10	7. Maintenance
5.07 Leasing	5.10	8. Deferred Maintenance Reduction (DMR)
5.08 Disposition	5.11	9. Recapitalization & Modernization
5.09 Facility Designations	5.11	9.a. IGPP
5.10 Maint. & Deferred Maint. Reduction	5.12	9.b. Line Items
5.11 Recapitalization	5.11	9.c. GPP
5.12 Line Item Projects	5.08	10. Space Bank Analysis
5.13 Performance Indicators & Measures	5.08	11. Site's Alternate Investment Plan for...
5.14 FIMS	5.13	12. Performance Indicators & Measures
5.15 Process for Development Plan	5.16	13. Energy Management
5.16 Energy Management	5.07	14. Leasing & Third Party/Non-Federal...
5.17 RPV Estimates	4.0	App 1 Land use Plan
6.0 Summary of Resource Needs	2.0	App 2 Inventory & Maps of Buildings
Appendix 1 Summary Overview of SC Facilities	2.0	App 3 Inventory & Maps of Infrastructure...
Appendix 2 Ames Lab Organizational Chart	6.0	App 4 FY 08 Integrated Facilities & ...
Appendix 3 FY2006 Contractor Perf. Eval. & Measurement Plan	5.12	App 5 Prioritized list of Line Items Projects
Appendix 4 Table of Contents Crosswalk	5.08	App 6 List of Facilities to be Formally Declared...
	5.08	App 7 List of Excess Facility Projects
	6.0	App 8 FY 2008 GPP Information Provided to Hqs..